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Textile World

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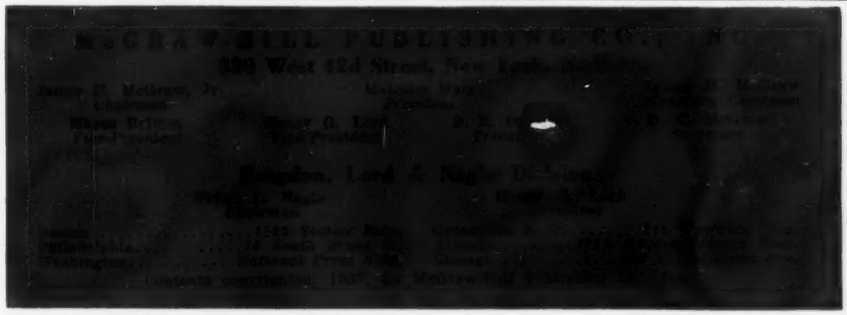

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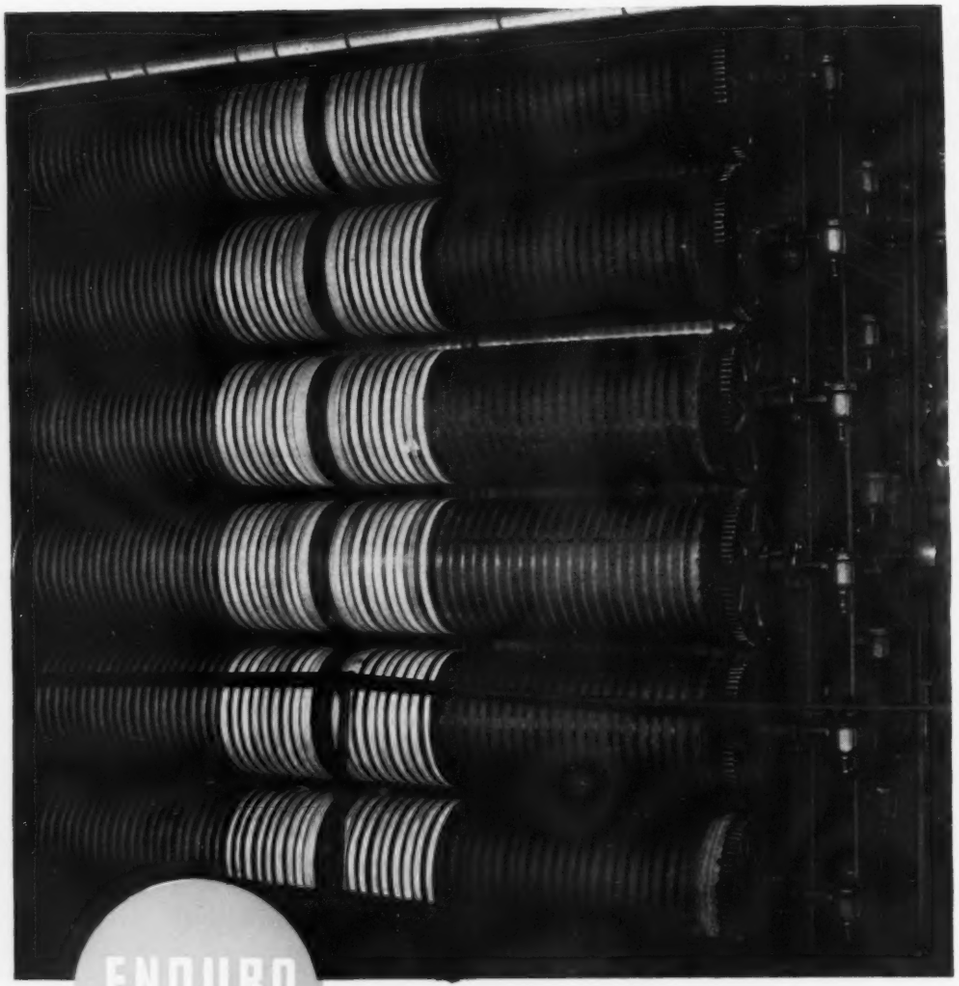

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Textile World

March, 1937

Editor: DOUGLAS G. WOOLF

The South's Heritage

IT will be Old Home Week in Greenville, S. C., from April 5 to 10. That week will mean much more than just the Southern Textile Exposition, important as that event is. It will symbolize, at least to this writer, the emergence of the cotton textile industry from the shadow of 15 years' depression.

For the first time in all those years, there seems to be some assurance of stability ahead. Not only are the mills busy, with profitable orders on their books, but the basis has been laid for a continuance of that condition. Millions of spindles have been liquidated during the last decade. Remarkable mechanical development has lessened the chance of the unfit being able to compete for any length of time. Establishment of improved labor standards has sharply decreased the opportunity in the industry for the chiseler type of manufacturer.

IT is the latter phase that deserves major emphasis. Textile workers have made more progress during the last four years than during any similar period in the history of the industry. The establishment of the 40-hour week and the elevation of wage standards, including the pegging of a minimum wage, have been epoch-making. In all this the Southern industry has played a brilliant part.

The public knows too little about all this. In fact, it knows too much that is not so. Recently, a chain of daily newspapers published a series of articles describing the migration of low-wage industries to certain areas of the South. There was a great deal of exaggeration and wrong emphasis in these articles; also, it is charged, certain of the statements gave a wrong impression of the situation. Nevertheless, there undoubtedly, and unfortunately, is just enough basis of fact to make the situation one which will bear watching.

And, from the standpoint of the textile manufacturer, here is the important point: The cases described were, without exception, apparel manufacturing companies. And yet the primary textile industry, despite its heroic struggle to improve its labor standards, was linked with this situation, in the minds of most people. To them, a cotton garment factory and a cotton mill are one and the same thing.

This "invasion" of the South by low-wage, sweat-shop industries has not yet reached a critical stage, but it easily could if not checked. The textile manufacturer can help to check it by:

1. ***Publicizing*** **any such cases that come to his attention, either in his own section or elsewhere.**
2. ***Discouraging*** **his community from joining in the new—or rather resurrected—sport of bidding for new industries, any new industries, and using bits of the blue sky as chips.**
3. ***Resisting*** **to the last ditch any tendency on the part of this low-wage infection to spread to the primary industry. This last may seem remote, but such things have happened before.**

In this fight, textile men will have the support of the ethical garment manufacturers of the South —and there are many of them. Increase in apparel production in the Southern States should be encouraged; but it should be kept in the hands of men who will preserve the heritage of Southern industry.

THAT heritage is something very precious. We know that there are many who would scoff at this. The picture of a line of starving children filing into a Southern cotton mill in the cold gray dawn has been too easy to create and to perpetuate.

But we who know the Southern textile industry know what it has accomplished. We know the great force it has exerted in the recovery of the South from prostration to prosperity. We know, also, the part it played in developing Code No. 1 and in paving the way for a new era of labor standards and employer-employee relationships.

Those accomplishments are to its everlasting credit. They must—and will—be guarded zealously by the manufacturers who have been responsible for them.

The Editor Says

The C. I. O. Moves In

TEXTILES have made the front page again, thanks to the C. I. O. Indications are that the industry will continue to occupy that position, on and off, for a while.

In a new situation of this sort, it is always helpful to strip it down to its fundamentals. Here they are: The industry is operating on orders at a high rate of activity—and more profitably, for both employers and employees, than has been true in years. Into this picture moves a labor union, with the avowed purpose of "organizing" the industry. The union, on the statement of John L. Lewis himself, represents only 10% of the textile workers; on the basis of voting strength at the A. F. of L. convention last fall, the membership then was 8% of the number Mr. Lewis takes as the total employed.

Obviously, the purpose behind the campaign has nothing directly to do with wages, or hours, or working conditions, even though they will be the "properties" used in the show The real objective, of course, is to unionize the industry.

The tactics to be used will include the sit-down strike; in fact, we understand that by the time this issue appears workers may be "sitting down" in at least six New England plants. How far the union will go in duplicating its "flying squadrons" and other shameful tactics of 1934 will depend, we imagine, upon the degree of the restraining influence which Sidney Hillman, as chairman of the new Textile Workers Organizing Committee, may have upon Francis Gorman, president of the U. T. W.

There you have the background—and the probable tactics. Now, what should the industry do about it?

First, it should continue to maintain the sound labor standards which are the basis of, and main reason for, the present more profitable era. The minority which has stepped off the reservation—in length of shift, or wages, or any other phase—should get back in line again, promptly.

Second, the industry should use every legitimate means, through both individual and associational action, to tell its labor story to the public. It is a story to be proud of, and of the type that will command public approval.

Third, the industry should "keep its shirt on." We tried to think of some more elegant expression, but none expresses so well what we mean. During the course of a campaign of unionization, such as the one which the textile industry now faces, animosities are engendered which persist long after the crisis. Every attempt should be made in advance to keep them at a minimum. This entails a certain psychological attitude. It must be borne in mind that the C. I. O. drive on textiles is a straight business proposition on the part of Mr. Lewis and his associates, even though it will be dressed up as a crusade. If it is continually thought of as the former, the heat so often generated by the latter, and artificial, phase will be missing.

Seldom have employer-employee relations in the textile industry been more harmonious than they are at present. Every effort should be made, despite the pressure of difficult circumstances, to keep them that way.

Just Good Business

WE are not impressed by most resolutions passed by trade associations "in convention assembled." They are usually either "agin" something, or else couched in such generalities that any school of thought can use them for ammunition.

But the action taken by the Hosiery Industry Conference held in New York last month was something else again. It declared itself "in favor of reasonable and practical, Federally-enforced legislation regulating hours, wages and fair trade practices." . . . Just like that.

And then the conference went on to set down in one-two-three order the specifications for the legislation it favored: namely, the type that would "permit each industry to draft the regulations which would govern its operations, such regulations to be subject to the approval of the Government, and, when so approved, to be enforced by the Government." That is exactly the type of legislation we have been advocating in these columns. The conference further went on record in favor for the forty-hour, five-day week, and classified occupational minimum wage provisions, as against a single basic minimum governing all industries.

We have written a lot recently about the necessity of industry departing from its negative position, and taking a positive stand on these vital matters. Quite aside from the academic consideration that it has an obligation to do so, there is a practical consideration also. It's good business.

Not So New After All

THE idea of figuring out how much capital investment is necessary per employee, in a given company or industry, isn't so new after all. It will be recalled that the February issue of TEXTILE WORLD carried an article which showed the investment per employee, for the cotton textile industry, to be $5,000.

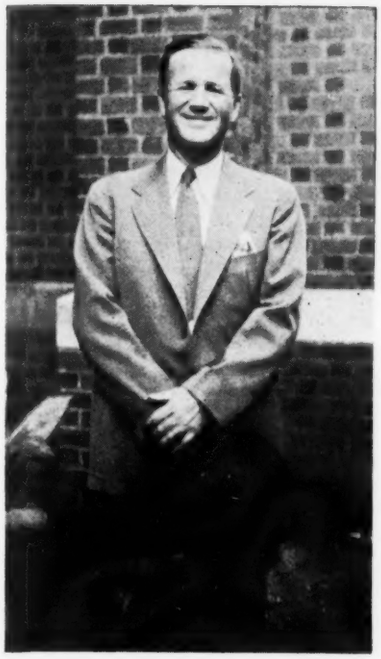
Well, it seems that back in 1911, Franklin W. Hobbs, in his address as president of the National Association of Cotton Manufacturers at Manchester, Vt., reported on a very comprehensive survey made by him which included also this very same point.

"It seems to me that this fact is an impressive one," he said. "Before employment can be given, an investment in capital stock, round numbers of $1,000, has been made for every man and women who is to be employed in a cotton mill—or, considering the actual replacement value of the mills, the investment requisite before a man or woman can be given work is not $1,000 but almost $2,000."

That was 26 years ago. Undoubtedly, the much higher cost level of today accounts for the difference

WE have never particularly craved editing a paper for the overall trade. But we *do* wish we had some legitimate excuse for recording the fact that stockholders of Oshkosh Overall Co., Oshkosh, Wis., have been advised of a proposal to change the company's name to Oshkosh B'Gosh, Inc.

Textile Personalities



William P. Jacobs

THE term "Jack of All Trades"—in a different sense of the word, since he is master of them too—could well be applied to William P. Jacobs, secretary and treasurer of the Cotton Manufacturers Association of South Carolina and of the Print Cloth Group of Cotton Manufacturers. Rather than to attempt a description of the personality of this versatile young man, it seems simpler to list his accomplishments, which speak for themselves.

Only 43 years old, he recently was made president of Presbyterian College, Clinton, S. C., an institution of higher learning founded by his grandfather. In addition, he is executive vice-president and founder of the Institute of Medicine Manufacturers, New York; president of Jacobs & Co. and Jacobs List, Inc., Clinton, advertising, printing and engraving firms; vice-president of Gray's Funeral Home, Clinton; vice-president and treasurer of Clark-Jacobs, Inc., New York, general advertising; secretary-treasurer and founder of the Clinton Building & Loan Association.

Furthermore, he is a deacon in the Presbyterian Church, and at one time or another has served as an officer in innumerable civic, charitable, social and business organizations.

At various times, Mr. Jacobs has done special work for the American Cotton Manufacturers Association and the Cotton-Textile Institute, separately and jointly, such as studies of mill-store problems, the processing tax, night work for women and children, power rates, general taxation, etc. In his "spare time" he has written several books, notably "The Pioneer" and "Problems of the Cotton Manufacturer," not to mention articles on cotton manufacturing, drug manufacturing, and building-and-loan activity.

Hobbies include tennis, golf and football. He is a real enthusiast in the last-named sport offering each year an Interference Trophy to the best blocker and most unselfish football player among college players of South Carolina, the Southeastern Conference and the Southern Conference. These trophies are presented at an annual dinner held in Clinton.

Herbert P. Crenshaw

IT is increasingly true that many of the young executives in the industry today arrived at positions of responsibility via the up-from-the-ranks route. An example of this is Herbert P. Crenshaw, secretary of Stonecutter Mills, Spindale, N. C., who did not even have the benefit of a college education or technical training of any kind. Despite this, he is an important cog in the Stonecutter production department and is well up on all technological improvements.

It is easy to understand why Mr Crenshaw went into the mill business when it is considered that he was born in Lancaster, S. C., in the shadow of the huge Springs mills, and grew up in Rock Hill, S. C., also a textile center. Furthermore, his father has always been in the mill business and is still active as overseer of carding and spinning at Republic Cotton Mills, Great Falls, S. C. He has a brother, Walter, at Clemson College studying textiles, who also plans a manufacturing career.

BORN in Richmond, Va., of a long line of Virginians; entered the hosiery industry in 1888 at the age of 14; hobbies, none; recreation, his job.—Such in thumbnail portraiture is John M. Botts, president of Harrington & Waring, hoisery mill agents. It doesn't tell much of the story, of course—thumbnail portraits never do.

So here are a few more salients.—In 1938 John Botts will round out a half-century of service to the hosiery industry. He joined Harrington & Waring when that organization was founded. He pioneered in developing the full-fashioned hosiery market (1892), and specialized finally in women's full-fashioned silk hosiery in which field he has long been a leading figure. He has been a member of the National Association of Hosiery Manufacturers since its inception, and his vigorous, often caustic, comments on trade problems are a valued feature of every association convention.

Mr. Botts is married and has one daughter. He lives at Jenkintown, Pa., and commutes 200 miles daily to his New York office. Reads a lot, especially biography, history and economics. Likes to be lazy on the beach in summer. But what he enjoys most of all, he will tell you, is his daily job—and it's no small one—of distributing the output of seven leading hosiery mills.

John M. Botts

Cannon Jubilee . . .

Golden anniversary of Cannon Mills

resurrects memories of the founder

THIS writer finds it hard to believe that James W. Cannon, founder of the Cannon Mills, died as recently as 1921. Already he seems to belong to another age, to be one of an almost mythical assembly of super-men who carved an industrial empire out of a wilderness.

Probably the reason for the remoteness of Mr. Cannon's memory, after so short a passage of time, is the fact that his death (in December 1921) very definitely did coincide with the end of an era. Certainly, for the textile industry at least, a golden age terminated suddenly and there began a bleak period of depression and collapse from which the industry is only now just emerging.

It is all the more remarkable, then, that the organization created by James W. Cannon 50 years ago should be stronger today, after those 15 years of depression in the industry, than it has ever been before. In this it has been the exception rather than the rule, as the last decade's troubles of so many erstwhile great textile enterprises will bear witness. This means, then, that Mr. Cannon built not only a big organization but one of the type that could withstand economic crises.

A Two-Fold Reason

In studying the Cannon history for the reason for this accomplishment, the writer feels that he found it in two very simple facts. One is that the founder—and his son, Charles A. Cannon, after him—have always been a jump ahead of change; that they never waited for the market for a product to disappear but were ready with a new line before the old one had really slipped. The other simple fact was that James W. Cannon was always trying to get as near to the consumer with his product as possible; and that Charles A. Cannon, through his appreciation and utilization of the science of advertising, has capitalized this characteristic of his father's organization, and has made it great, possibly beyond even the dreams of his father.

***The Southern Textile Exposition Number of TEXTILE WORLD is an appropriate medium for this brief article marking the 50th anniversary of an organization established by one of the great builders of the South: James W. Cannon.*—Editor.**

These two simple facts stand out on every page of Cannon history: in the early decision to spin cotton in the South rather than ship it North to be spun; in the next major move, that of carrying the fabrication into cloth and starting the famous Cannon Cloth; in the beginnings of the towel line which was ready to take up the slack when decline of home dressmaking reduced the market for Cannon Cloth; in the later addition of sheets and pillowcases; and in the merchandising and advertising aggressiveness which, particularly during the last decade, has made Cannon a household name and as recently as last month brought recognition in the annual advertising awards.

James William Cannon's history is another of those remarkable stories of personal achievement of the last part of the last century. Born on a small farm in Mecklenburg County, N. C., in 1852, he left the farm at the age of 14 to become a clerk in a store at Charlotte, five miles away. Two years later, at 16, he went to work for his brother who was a partner in the general store of Cannon & Fetzer at Concord. At 19 he bought an interest in that store and for the next 15 years served as its cotton buyer.

It was in this latter function that he began to wonder why cotton which he

bought was shipped North to be manufactured. This process of thinking was responsible for his starting a small mill in Concord when he was 35 years old—in 1887. That was the beginning of the great Cannon Mills of today.

As noted above, he first manufactured yarn but soon decided that a branded product was the only real source of profit. Cannon Cloth was the result. But this did not satisfy him as a permanent answer. He recognized the limitations of the market for this fabric and visualized some product, under the Cannon name, which would develop large volume sales. Here, the answer was Cannon towels, the first of which was produced in 1898—and incidentally the first cotton towel made in the South.

The wisdom of his move was demonstrated subsequently when decline of home sewing meant restricted possibilities for Cannon Cloth.

The start of the textile city of Kannapolis was in 1905 when Mr. Cannon bought a 1200 acre farm about seven miles from Concord and built on it a new towel mill. The name of the city, incidentally, is from the Greek words meaning City of Looms. The writer's face is a little red on this point; he has gone all these years in the belief that Kannapolis was merely a corruption of the name Cannon.

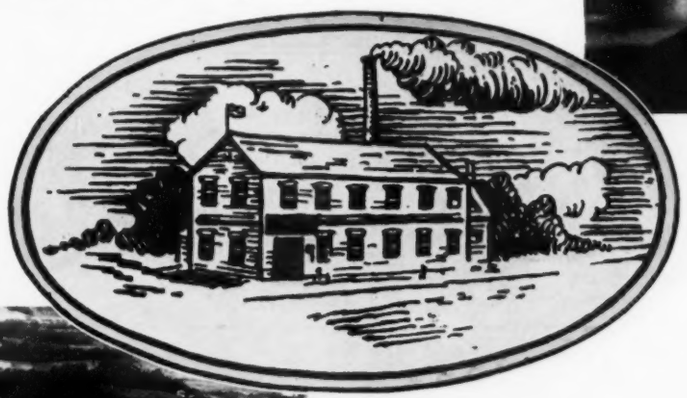
The expansion of the Cannon organization from 1905 to 1920 is known to all textile men. When James W. Cannon died in December, 1921, at the age of 70, it was understood that he was the controlling factor in the operation of 600,000 spindles and more than 10,000 looms. He was survived by his widow, who is still a familiar and well-loved attendant at conventions of cotton manufacturers, and six sons, the youngest of whom, Charles A. Cannon, is now president of Cannon Mills.

Cannon's Merchandising Era

Probably never has a father's vision been fulfilled more completely than Charles Cannon has carried out the program James W. Cannon conceived. Immediately upon his assumption of the presidency after his father's death, he enlisted the services of a prominent advertising agency and laid the groundwork for the consumer campaign which is now so well known. Important steps included the development of the Cannon label and of the machine for sewing it on Cannon products. The first consumer advertising campaign began in 1924.

Coincidentally with the growth of the advertising campaign, and entitled to no small part of its success, there has gone on steady progress in the designing and packaging of Cannon towels. In addition, Mr. Cannon has gradually diversified his line, one of the important relatively new products being sheets and pillowcases.

Today, the Cannon interest extends to the nine plants in the Cannon Mills Co., representing those originally controlled by the family; the so-called Cannon Group which manages six plants; and 16 plants represented by the selling agency, Cannon Mills, Inc. It is estimated that the Cannon companies do a business of about $50,000,000 annually, approximately half of which is in towels.



In oval is shown modest building in which Cannon Mills was started in 1887

Above to right is James W. Cannon, founder of the business, who died in 1921 at the age of 70.

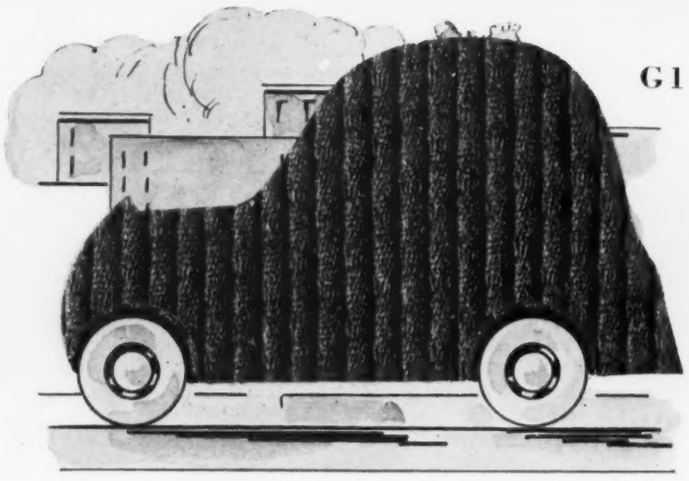
At left is airplane view of the Cannon plant and village as it appears today at Kannapolis, N. C.

At top of opposite page is Cannon's familiar electric sign

Company's Industrial Relations

No Cannon story is complete without a word about the company's relations with its employes. These can be best studied, of course, at Kannapolis where is concentrated such an important part of the manufacturing organization. The houses, the dormitories, the Y. M. C. A., and other phases of community life in that city are well and favorably known both within and without the industry. Critics of the mill village system, it is true, are fond of citing Kannapolis as a horrible example of "feudalism." The only answer this writer can give to such a charge is that he first visited Kannapolis in 1922 and has been through there several times every year since—and has consistently found that apparently the people of Kannapolis have not yet realized their awful fate. Or, if they do, they seem to be perfectly willing to suffer under it happily.

Bedford-Cord Novelties



G1

For the 1938 automobile will include such original weaves as the three described here

By R. A. C. SCOTT

This is the second and concluding instalment of an article which began in the Feb. 14 issue and which serves not only to show trends in automobile upholstery but to refute the belief that there can be nothing new in textile design.

THE examples given in the February instalment of this article illustrate the manner in which pleasing modifications of the Bedford cord can be obtained by the introduction of color. Although it must be admitted that the coloring of this special type of weave has its limitations, it will be quite evident to the designer possessing the necessary powers of imagination that other and equally as attractive ideas can be originated and applied in a very practical manner to the requirements of present-day manufacturing.

It is, however, possible to modify the weave itself for surprisingly effective results without losing the cord characteristics and without resorting to color contrasts. For instance, the design illustrated at *G* is constructed on the block-check order, where the first twelve ends and twelve picks give the same effect as the second twelve ends and picks, whereas the alternate positions preserve the plain Bedford-cord construction. In the cloth this shows longitudinal cords broken in regular block-check order, as will readily be seen by reference to *G1*, an actual photograph of the cloth itself. The draft and weave chain are given at *G2* and *G3*. Only six harnesses and 24 bars in the chain are required.

The design at *H* is also constructed on the block-check arrangement, but it differs in many respects from the previous example. Here we have the regular Bedford cord in which alternate cords are broken up in diamond form by the introduction of plain weave. After finishing, the plain-weave portions cause hollow indentations, elliptical in form. These, due to the firmness of this weave, do not shrink in width so readily as the regular cord portions and compel the cutting pairs of ends to distort, thus forming zig-zag sunken lines.

Fabric	Reed	Ends in Dent	Total Ends	Loom Width	Picks	Loom Weight	Finished Weight	Finished Width	Length Shrinkage	Warp Yarns	Filling Yarns
E.....	9¾	(5 – 6X)7.7	4368	81¼″	50	22 oz.	20/21 oz.	56″	6%	6.4-typp woolen [1] 2/20[s] cotton 8.8-typp woolen [2]	5.6-typp woolen [3]
F.....	9	7	5040	80″	48	23.3 oz.	21/22 oz	56″	6%	Ditto	Ditto
G & *H*..	8¾	6	4224	80½″	52	23.3 oz.	21/22 oz.	56″	6%	6.4-typp woolen [1] 2/20[s] cotton	5.6-typp woolen [3]
J.....	11¼	5–5–4–5–6	4320	80″	52	23.1 oz.	21/22 oz.	56″	6%	Ditto	Ditto

[1] 4-run, 21½-cut. [2] 5½-run, 29½-cut. [3] 3½-run, 18¾-cut.

E WARP PATTERN (3 times, 3 times)

6.4-typp woolen [1]...	8		1		2		1	= 32
2/20[s] cotton.....	1		1	1			1	= 8
8.8-typp woolen [2]...					1		1	= 4

E FILLING PATTERN

5.6-typp woolen [3] — Solid

F WARP PATTERN

6.4-typp woolen [1]...	1		2		2		2	1 = 8
2/20[s] cotton.....	1							1 = 2
8.8-typp woolen [2]...			1		1		1	= 4

F FILLING PATTERN

5.6-typp woolen [3] — Solid

G & H WARP PATTERN

6.4-typp woolen [1]...	10		= 10
2/20[s] cotton.....	1	1	= 2

G & H FILLING PATTERN

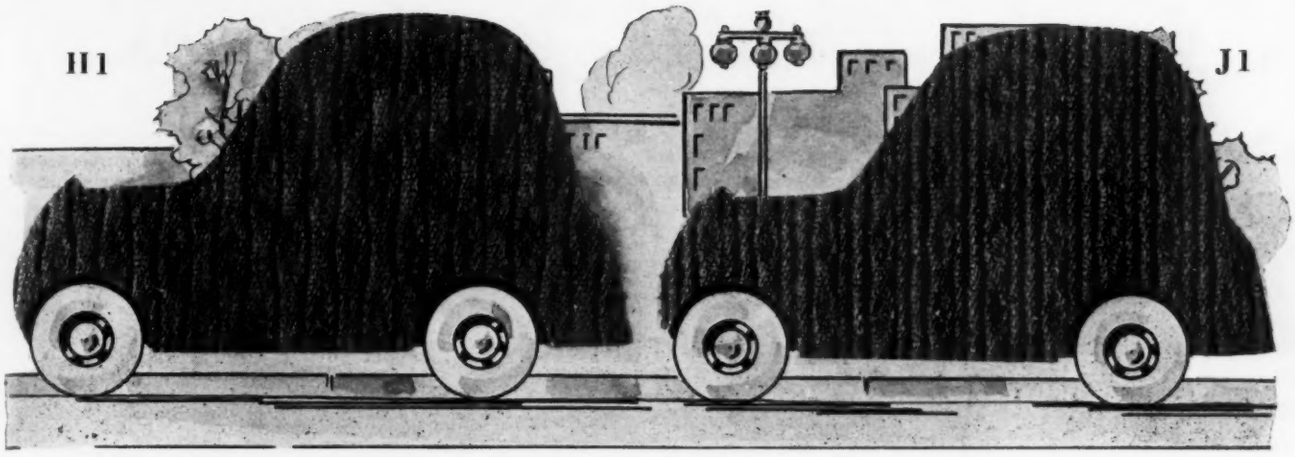
5.6-typp woolen [3] — Solid

J WARP PATTERN

6.4-typp woolen [1]...	8	6	4		= 18
2/20[s] cotton.....	1	2	2	1	= 6

J FILLING PATTERN

5.6-typp woolen [3] — Solid



The flat view indicated at *H3* shows the two backing picks of each cord shaded where they intersect with the face-cord ends in the formation of the diamond effect. A cursory examination of this sketch will clarify the method employed in its construction and the order of interweaving employed.

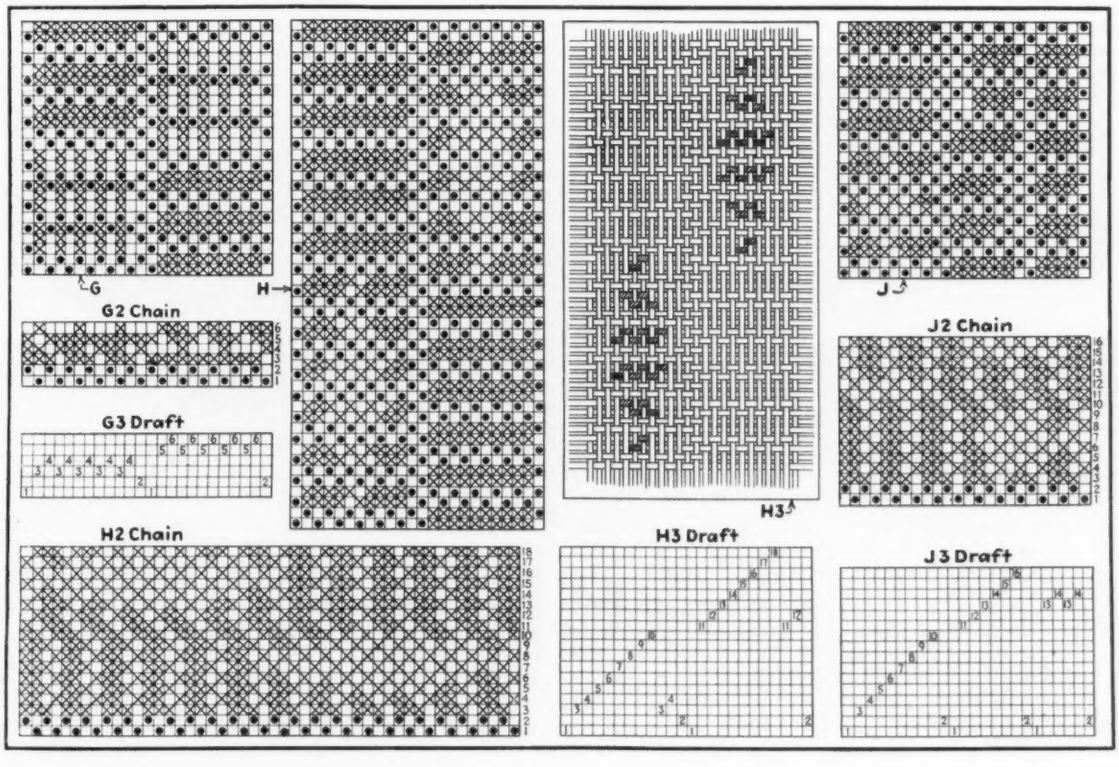
The plan and draft are indicated at *H2* and *H3* respectively, requiring 48 bars and eighteen harnesses respectively. A photograph of the actual fabric is given at *H1*. The latter depicts very clearly the wavy, indented lines and the sunken oval formation of the design in alternate cords.

We now come to a little more complicated idea, inasmuch as three different widths of cords are combined, each treated in a different manner. The design given at *J* embodies three varied cords of eight, six and four threads respectively. The first cord is broken up with plain weave in a manner similar to that employed in the first cord of design *H*. The second cord is arranged to run in serpentine order, as obtained by the extension of plain weave at each side in alternate order. The third cord is of the plain order. The combination of these three distinctive cord variations provides a most interesting, attractive, and decidedly new design which cannot fail to appeal to one's aesthetic sense. A glance at the accompanying actual photographic illustration of the cloth given at *J1* will without doubt bear out this contention. The corresponding plan and draft are given at *J2* and *J3* respectively, requiring 24 bars and sixteen harnesses respectively.

The fabrics and designs indicated at *G1*, *H1* and *J1* are of such an outstanding nature, both in appearance and their practicability to the automobile manufacturer, that there is every reason to believe that one or all of them will be adopted by the leading car manufacturers for their 1938 models.

In view of the fact that newness in design has been amply demonstrated in the foregoing examples, one is forced to the conclusion that, in spite of the slogan to the contrary, there is still opportunity for inventive skill. It might be truthfully said that those who still uphold the theory that "There is nothing new under the sun," show a distinct lack of imagination and have a very poor understanding of human nature.

Suitable constructions for the various fabrics mentioned are given in the accompanying table. It has been our aim to specify the same counts and qualities of yarns throughout.



In the Month's Textile News

Fiber Identification Bill Before Congress

THE much-discussed fiber identification of fabrics issue has finally landed in the lap of Congress. After months of publicizing, meetings and what-not, a bill empowering the National Bureau of Standards of the Department of Commerce to set rules for the identification of all textiles by fiber content was introduced in the lower House this month by Representative Peyser of New York.

The bill does not go into the intricate technical questions involved. Its aim, according to the title, is "to require informative labeling of textile fabrics and textile products in interstate commerce for the purpose of preventing deception of the public." The measure prohibits interstate commerce in all textiles not so labelled. What support the bill will have is uncertain, as the N. Y. Federation of Women's Clubs has gone on record as opposed to legislative action, preferring to work through the Federal Trade Commission.

Rayon Conference

FINAL arrangements are now being made for the National Rayon Technical Conference in Washington, D. C., May 14 and 15, under the cosponsorship of the Textile Division of American Society of Mechanical Engineers, American Association of Textile Chemists & Colorists, United States Institute for Textile Research and Committee D-13 of American Society for Testing Materials. Purpose of the meeting is to bring together members of technical and scientific organizations for discussion of the various problems of common interest involved in manufacture and processing of rayon yarns and fabrics.

Tentative program includes presentation and discussion of papers on the following subjects: (1) Air conditioning of textile plants making and using synthetic yarns; (2) Mechanics of synthetic fiber weaving; (3) Throwing of rayon yarn; (4) Dyeing and finishing of rayon and acetate fabrics; (5) Testing of rayon and acetate yarns and fabrics; (6) Manufacture and use of cut rayon staple; (7) Use of corrosion-resistant metals and alloys in rayon equipment.

An informal dinner will be held May 14 at the Wardman Park Hotel, the headquarters of the conference. All textile men interested in the manufacture or processing of rayon yarns and fabrics are cordially invited by the sponsors. Details regarding reservations, etc., may be obtained from M. A. Golrick, Jr., secretary, A.S.M.E. Textile Div., 29 West 39th St., New York.

Knitting Arts Show Will Set Record

BOTH in number of exhibitors and the wide range of new equipment which will be shown, the Knitting Arts Exhibition at Commercial Museum, Philadelphia, April 19-23, incl., promises to exceed in significance any of its predecessors since the boom years of the '20s. The event, held under the joint auspices of the National Association of Hosiery Manufacturers and the Underwear Institute, will likewise tie in with the annual conventions of these two organizations. At time of writing (March 1) approximately 300 exhibiting firms, including many not previously represented, have reserved space; this exceeded last year's final total, and space in the hall is being taxed to accommodate last-minute applicants. While convention plans had not been completed, it was expected that the custom of other years would be followed; normally the hosiery meeting would be held on Wednesday, April 21, and that of the underwear manufacturers on Thursday, April 22.

Rayon Tire Cord in Production

USE of rayon cords in the heavy-duty tires for trucks and buses, announced early this month by Goodyear Tire & Rubber Co., marks the culmination of 10 years of experimental work by tire manufacturers and rayon producers in developing a tire capable of resisting and throwing off the destructive internal heat set up at sustained high speeds under heavy loads. Goodyear states that tires made with Rayotwist—as the new cord is known—can be expected to give, in some instances, four to five times the mileage of ordinary tires. Tires with a Rayotwist base are expected to find their chief use on trucks and buses where high-speed runs with heavy loads are common. For passenger-cars, where speed is not excessive and loads are moderate, it is stated that tires with rayon cords do not surpass the performance of standard tires.

Annual production of tire cord in the United States is in the neighborhood of 200,000,000 lb. There are approximately 24,000,000 passenger cars; somewhat under 4,000,000 trucks and buses. But since truck and bus tires are much heavier than those for passenger cars and their average annual mileage is considerably greater, we estimate that about 40% of the tire cord consumed is in buses and trucks. If rayon entirely replaces cotton in bus and truck tires, on the above basis consumption of cotton for tire cord will drop to about 120,000,000 lb., or 60% of the present consumption. If rayon cord tires give four times the mileage of ordinary tires, consumption of rayon for tire cord will be about 10% of present total cotton consumption, or say 20,000,000 lb. annually.

Name Delegates For Textile Conference

NINE representatives of the International Labor Office will represent that body at the World Textile Conference to be held under its auspices in Washington commencing April 2. These representatives include, from the United States, Carter Goodrich, U. S. Labor Commissioner at Geneva and U. S. Government Representative; Henry S. Dennison, of Dennison Mfg. Co., Framingham, Mass., U. S. employers' representative; and William Green, president of American Federation of Labor, U. S. employees' representative. Henry I. Harriman, former president of the U. S. Chamber of Commerce, has been named as Mr. Dennison's substitute, in case he is unable to attend.

This And That

AS the financial statements for 1936 continue to come out, evidence increases that last year was a decidedly more profitable period in most branches of the industry than had been its predecessor. This is particularly true in the cotton and wool divisions. . . .

At the annual banquet of the Alumni Association of the Philadelphia Textile School, Feb. 26, it was announced that a $15,000,000 program is in prospect for the Pennsylvania Museum of Art, of which the School of Industrial Art and the Philadelphia Textile School are parts. The program will be spread over a 10-year period and will include the establishment of new buildings, etc.

Japanese Agreement

Interpreted by Dr. Murchison at "welcome-home" dinner

WELCOMED home by a remarkable demonstration at a dinner in New York Feb. 25 under the auspices of the Textile Square Club, Dr. Claudius T. Murchison, president of the Cotton-Textile Institute and head of the cotton textile mission to Japan, gave the diners a detailed interpretation of the agreement reached by that mission. The attendance of hundreds representing all divisions of the industry was a great tribute to Dr. Murchison and his associates.

Introduced by Harry Riemer, president of the club, the doctor first outlined the background:

"In 1933 the Japanese were shipping to our shores only about 1,000,000 yd. of cloth annually; in 1934 the inflow was approximately 16,000,000 yd.; in 1935 it leaped to 36,000,000 yd.; and 1936 showed a volume of approximately 75,000,000 yd. with every indication that 1937 arrivals would dwarf this figure. We did not know at this time that, within a few days, we would be informed that the Japanese bookings of American business for 1937 had reached a sum total of more than 150,000,000 yd. by the time the year was three weeks old. It is not unreasonable to suppose, on the basis of the most conservative possible estimate, that the 1937 Japanese imports to the United States might have reached the colossal figure of 500,000,000 yd. had nothing been done to retard the natural course."

He then gave the chief features of the agreement itself, as follows:

"It is important to note that the Japanese have accepted the principle of quantity limitation as the fairest and most practicable means of regulating their textile trade with the United States in view of the extraordinary cost differentials existing between the two countries. From a long run point of view, the acceptance of this principle is even more important than the current quota figures agreed upon.

"It was the original hope of the American mission that the 1937 quota would be based on the average imports of 1935 and 1936. This hope was defeated by the action of the American market in placing on the books of Japanese exporters unfilled orders for 1937 amounting to 155,000,000 yd. as of Jan. 21. In consenting to this 155,000,000 yd. limitation for the year 1937, the Japanese, in effect, voluntarily deprived themselves of all further business in the American market for the remaining eleven months of the year.

"The representatives of both industries regarded this 1937 situation as abnormal and in consequence were able to agree upon a much smaller quota of 100,000,000 yd. for 1938. At their request, the Japanese were accorded the option of utilizing one fourth of the 1938 quota in 1937. This option is justified partly because of the current activity existing in the American market, and partly because many Japanese mills which have not yet participated in the 1937 American business would be arbitrarily and unfairly cut off from that business by a closing of the gates without notice on Jan. 21.

"Through this two-year arrangement both sides benefited to an extent which cannot yet be fully indicated. The American side now has security and stability where formerly there existed the threat of immeasurable and overwhelming competition. Incidentally, they are likewise saved from the expense, the discomfort and the misinterpretations, the recriminations, the bickerings and the hazards involved in a campaign of political action looking to protection through legislation, or the exercise of executive powers.

"On their side, the Japanese will have for the years 1937 and 1938 a volume of business greatly in excess of any previously enjoyed in the American market. Furthermore, for a considerable portion of this business they should receive much higher prices than they have heretofore obtained. They are also freed from the danger of tariff increases or other forms of restrictive legislation so long as the agreement is effective."

C. I. O. Tackles Textiles

THE textile industry is now in line for attention by the Committee for Industrial Organization—the John L. Lewis group which includes the United Textile Workers of America. To date, the attention has consisted mostly of headlines, but action is expected before this issue reaches its readers. First action will be a series of isolated sit-down strikes among New England mills.

Despite the initial drive in that section, the real attack, of course, will be in the South. Just how soon the effort to unionize cotton mills there will start is unknown at this writing but plans will undoubtedly be crystallized shortly.

One of the most important considerations, from the standpoint of the textile industry, is that the C. I. O. drive will have the vigor and aggressiveness of a new organization, out to win its spurs. This means that the C. I. O. will feel it just can not afford to lose. Another outstanding fact is that the new set-up brings into the textile picture Sidney Hillman, one of the shrewdest labor leaders in the country. As chairman of the new Textile Workers Organizing Committee, Mr. Hillman ranks Francis Gorman, president of the U. T. W., who is merely a member of that committee. In the opinion of those who have followed the careers of the two men, this means that the textile industry will, for the first time, encounter really expert tactics on the part of organized labor.

The question of U. T. W. membership is, as always, anybody's guess. At the A. F. of L. 1935 convention, the votes indicated a membership of 79,200; whether that really represented paid members is difficult to say. On the basis of the 1936 convention the membership was 100,000. In any event, it certainly is far less than 10% of the total employed in the industry.

Another uncertain factor is the extent to which the C. I. O. has really established itself in labor circles and with the general public. The settlements in the automobile and steel fields gave its prestige a sharp rise, but the later recurrence of strikes raised doubts as to just what had been settled after all. Nevertheless, industry generally—and the textile industry specifically—is not inclined to under-estimate the potential strength of the Lewis movement. Impartial observers are confident that, in mass industries such as textiles, the industrial union is more effective—from organized labor's standpoint—than is the craft type.

Meanwhile, about the only tangible effect of the proposed drive upon the industry, to date, has been a stimulation of orders and a strengthening of prices. This improvement came at a time, particularly in cottons, when uneasiness was being felt about the price structure—and consequently at least postponed a show-down on that question.

Twists for Crepe Hose

Need for revision in hosiery association's standards for minimum turns per inch

By William T. Leggis

CREPE hosiery continues to be the vogue this season, but it appears that it is facing a not too distant death if the various malpractices concerning the manufacturing and merchandising of this type hosiery continue. A few months ago the crepe stockings offered were for the most part all high twists which imparted to the stocking a distinctive dull, smooth, crepy appearance. Consumers were willing to pay more for this luxury hosiery, as it possessed certain advantages which more than compensated for the higher price. For example, these crepe stockings were resistant to catches and snags, boasted a fine, dull, permanent finish, and practically did away with the common practice of wearing stockings inside out in order to secure a bit more dullness at the expense of neat appearance. The types of twists found in such hose were for the most part as illustrated in Fig. 1.

But occasionally a stocking would be purchased as a genuine crepe which had no more right to be called a crepe than tram has to be called high twist. These stockings were usually twisted approximately 25 turns, dull finished, and stamped "First Quality Crepe Ringless," etc. Of course the finish disappeared after a few washings, and the "crepe" stocking was no longer a crepe. Needless to say, practices of this type can ruin a profitable business in crepe hosiery. Also, it is only natural that the demand for crepe hosiery should eventually be felt in the lower-priced field. This demand was supplied at first by reputable manufacturers with genuine high-twist crepes. However, at this stage of the game came the tendency to cut out twist, which was most unfortunate for the throwsters, as simple-end twisting was very profitable.

Alternatives Considered

The usual practice of a hosiery manufacturer throwing his own silk is to buy these novelty twists from a throwster only so long as he cannot make them profitably himself. This is only sound business sense. However, many manufacturers who were confronted with the crepe vogue and found that they did not have sufficient twisting equipment to throw genuine crepes, considered the following alternatives:

1. Give up the thought of knitting crepes. This manufacturers could not very well do, for the demand was great and had to be met.

2. Purchase new twisting equipment. Manufacturers were reluctant to do this since they did not know how long the vogue would last.

3. Use existing equipment to make the best crepe possible even though the yarns produced did not look like crepes.

4. Purchase crepe yarns from a throwster. Properly thrown crepes are expensive; and, consequently, manufacturers submitted their own specifications calling for much lower twists.

In order to clarify the crepe situation, the National Association of Hosiery Manufacturers, in August, 1936, issued a set of "Standards for the Minimum Twist Requirements for Crepe Yarns for Hosiery," as follows:

"Hose to be designated as crepe should be constructed in the body or boot of yarn in which the total number of turns in both the final and initial twists be at least 100 turns per inch for 2-thread, 80 turns per inch for 3-thread, 60 turns per inch for 4-thread, and 50 turns per inch for 5-thread." Initial twist may be either "S," "Z," or combination of both. Twists complying with these standards are illustrated in Fig. 2.

Total Twist Insufficient Guide

In the opinion of the writer, these twist standards were set up in a very unsatisfactory manner. No attempt was made to differentiate between initial and final twist. According to the standard, a 2-thread crepe with the construction [1-thread no twist, 1-thread 50 turns "S," twisted together 50 turns "Z"] is just as satisfactory as a 2-thread crepe with the construction [1-thread twisted 35 turns "S," 1-thread twisted 35 turns "S," twisted together 30 turns "Z"], or a 2-thread crepe with the construction [1-thread 40 turns "S," 1-thread 40 turns "S," twisted together 20 turns "Z"]. The writer cannot understand why the same standard should cover all these cases. Anyone who has had any experience with hosiery crepe or has attempted to make the above three crepes knows that the only "decent" crepe in the lot is the (50-S, 0) 50-Z. The other two are little better than ordinary high-twist 2-thread, 30 or 20 turns.

In yarns of this type, it is the final twist more than anything else which imparts to the stocking its dull appearance, and the hosiery association would do well to establish a minimum final twist in addition to the total minimum turns. The throwsters would then know how much initial twist would be necessary to balance the yarn sufficiently so that undue knitting troubles would not arise from kinking, or so that the finished stocking would not twist about the wearer's leg.

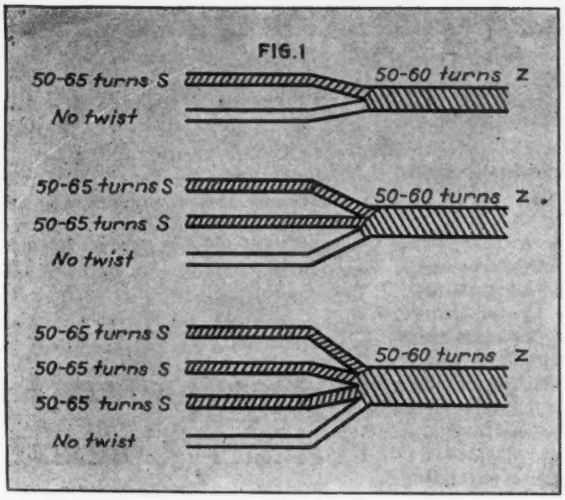
Proposed Revision

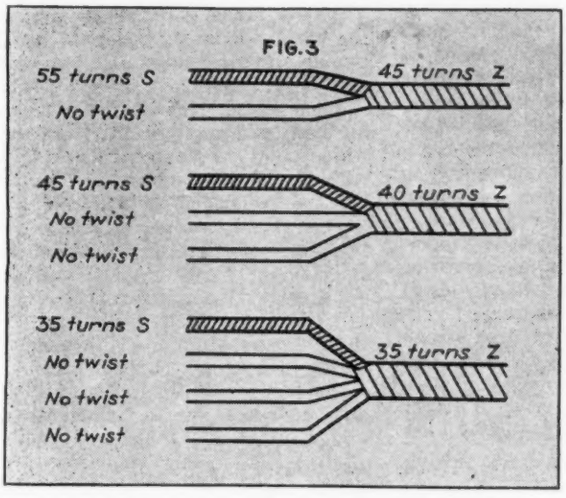
The writer suggests that, in order that crepe stockings may continue to hold the good will of the consumer, certain revisions be made in the minimum standards as established by the hosiery association. However, it should be emphasized here that such proposed revisions are not intended to be the final word in crepe constructions, but rather a basis for further investigation. The writer's "Proposed Minimum Twist Requirements for Crepe Yarns; Revised," are as follows:

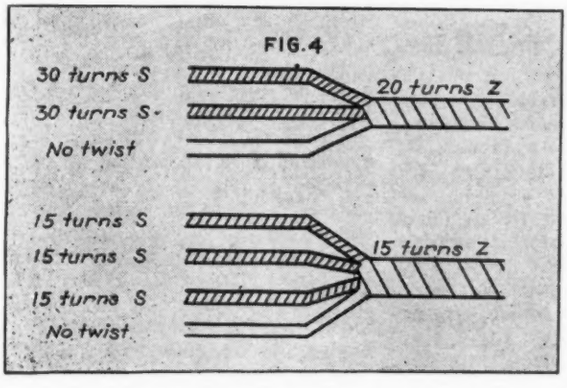
"Hose to be designated as crepe should be constructed in the body or boot of yarn in which the total number of turns per inch in both the initial and final twists shall be at least 100 turns per inch for 2-thread, 85 turns for 3-thread, 70 for 4-thread, and 60 for 5-thread. Also, the minimum final twist shall be 45 turns per inch for 2-thread, 40 for 3-thread, 35 for 4-thread, and 30 for 5-thread."

Regardless of how the initial twist is distributed, the crepes made from such minimum standards would all have a fine, dull appearance, which, in the opinion of the writer, is the first requisite of a crepe stocking. Fig. 3 illustrates crepe yarns which comply with the proposed standards, and which are practical and quite inexpensive to throw—if thrown properly.

The chief advantage of the minimum final-twist specification is that it prevents the occurrence of such 3- and 4-thread crepes as those illustrated in Fig. 4. Those, although they come under and comply with the minimum standards as set forth by the hosiery association, do not look anything at all like crepes. As a matter of fact, they







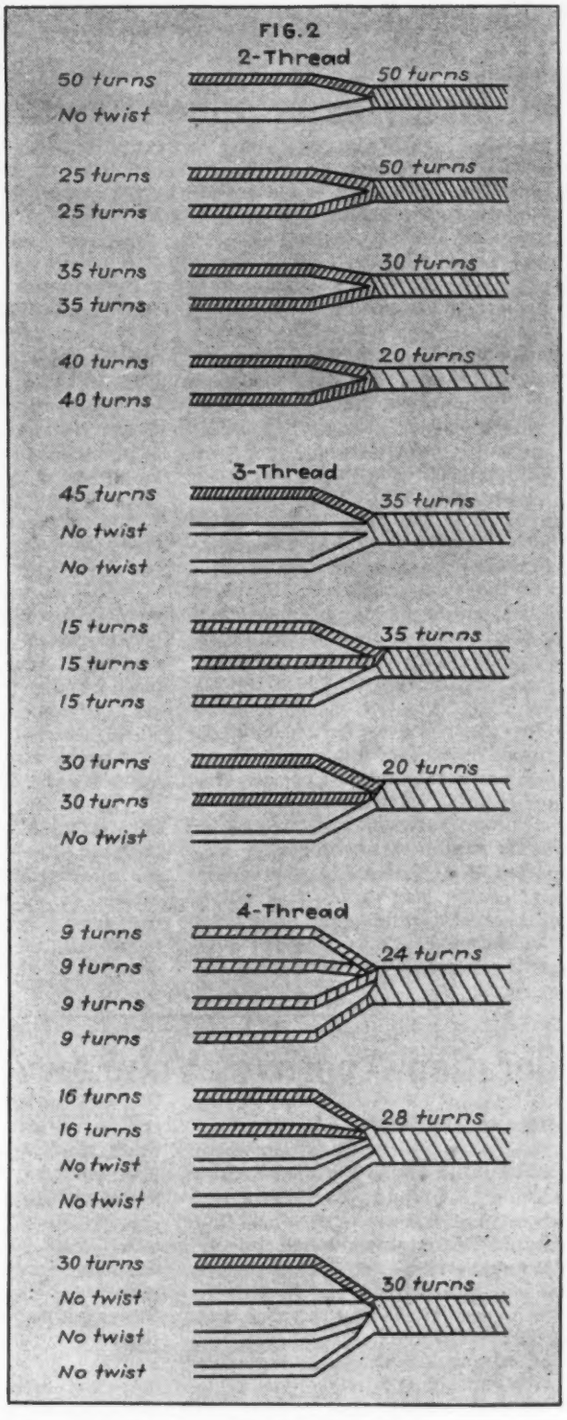


Fig. 1—Twists for high-quality crepe hosiery; Fig. 2—Minimum crepe standards recommended by National Association of Hosiery Manufacturers; Fig. 3—Twists complying with proposed revision; Fig. 4—Twists excluded by proposed revision.

are practically as shiny as an ordinary high-twist stocking having the same final twist but with no initial twisting.

The writer has purposely suggested his revisions to conform to the downward trend in total twist as the number of threads increases, as advocated by the minimum standards of the hosiery association. However, his experiments have shown that a better-balanced yarn, with initial twisting in more than one thread, will yield a stocking which will hold its shape better in its packing and which will decrease the possibility of trouble from the seam twisting about the leg. Incidentally, the more the twist is compensated, the less the possibility of knitting troubles, kinking, etc. In other words, a 3-thread crepe having the construction (45-S, 45-S, 0) 40-Z, will give better results than the construction (45-S, 0, 0) 40-Z. Therefore, it appears that the total number of turns should increase with the number of threads. In quality brands this condition is found to be the case, and twists illustrated in Fig. 1 predominate. Furthermore, quality brands will continue to ignore entirely minimum standards for crepe and put in all the twist deemed necessary for a quality product. Consequently, it is chiefly for the benefit and protection of the cheaper brands that the foregoing suggested revisions warrant consideration.

Wool Men Discuss Fiber Identification

AGGRESSIVE rather than passive action in the matter of fiber identification through labeling was decided upon at the annual meeting of the National Association of Wool Manufacturers, held in New York, Feb. 17. Specifically, the immediate objectives are acceptance by the industry of the Recommended Commercial Standards of the Bureau of Standards governing the labeling of fabrics, and active support of legislation designed to make it an unfair practice for those who manufacture garments and other products to be sold to the public to misrepresent the content of the fabrics of which these articles are made.

Arthur Besse was again elected president of the association, with Franklin W. Hobbs, Moses Pendleton, and Thurmond Chatham serving as vice-presidents and Walter Humphreys as secretary and treasurer.

Incomplete tabulation made it impossible for the wage committee to turn in a final report on the wage survey which it has conducted, but preliminary studies indicate that there is now a larger spread between the lowest and the highest rates of pay for a specific occupation than existed in September, 1933, when the last survey was taken. In most groups, wage increases from 1933 to December 1936, exceeded 10% in New England and Pacific Coast areas.

A strong recommendation for the continuation of voluntary support of the Rules of Business Procedure was made by the executive committee, which pointed out that the code covering minimum wages and the maximum work shift was not complicated. There have been certain violations, the committee reported, but these deviations have not seriously affected the industry and every effort is being made to persuade such operators to conform.

In tariff matters it was decided not to oppose a bill in Congress extending the president's power to negotiate reciprocal trade treaties, as such opposition could not be effective and it was believed that a better hearing could be secured at the State Department in connection with possible items under consideration with some particular country if representatives of the association did not appear in opposition to the general theory of the Reciprocal Tariff Act.

Other measures adopted at the meeting were the formation of a committee to gather and make available to members information on charities and contributions, and adoption of a new plan for electing directors. The resolution divided the nominees into three groups, the terms being one, two, or three years. In the future, one third of the directors will be elected each year.

Federation Approves Voluntary Leadership

THE annual meeting of the National Federation of Textiles, Inc., which was held Feb. 16 at the National Republican Club, New York, had two major aspects of importance: (a) the meeting constituted the first formal endorsement by the membership of the Federation's decision to return to the old Silk Association policy of having a voluntary officer from the industry as president and of having a voluntary organization of manufacturers who favor progress through cooperative action; (b) the necessity of being ready to face vital legislative issues was emphasized in an address by G. H. Conze, president of the Federation, who said the Federation would call a general meeting on legislative matters if need arises.

The meeting, a luncheon session, was attended by nearly 100 members, representing raw silk, yarn, silk and rayon fabric and other divisions. This form of annual gathering set a precedent for the organization, representing a compromise between the traditional dinners of the Silk Association and the more extended convention sessions of the NRA era. Directors were elected at the meeting and the new board subsequently re-elected the Federation's officers as follows: President, G. H. Conze, of Susquehanna Silk Mills; vice-president, W. Stunzi of S. Stunzi & Sons; treasurer, A. A. Clune, and secretary, Irene L. Blunt.

In commenting on the Federation's decision to return to its original administrative policy, Mr. Conze said that the organization's activities will continue to be carried on "by an experienced, understanding staff" who will meet the needs of the industry as in the past. "On the basis of this policy," he added, "the beginning of 1937 finds the Federation again a voluntary organization of men in the textile industry with a common interest who believe that through joint discussion and cooperation, through the medium of a progressive and constructive association service program," the industry can best progress.

In the secretary's annual report attention was drawn to the fact that the Federation, through its predecessor the Silk Association, now is nearly three-quarters of a century old. Activities of 1936 fell into eight chief branches: design protection, arbitration, trade mark registration, wearability of textiles — fiber identification, statistical service, legislation, loss prevention, transportation. Significant progress had been made in all these divisions, it was indicated. Particularly interesting was the increasing popularity of the Design Registration Bureau, as shown by the fact that designs registered in 1936 totalled 27,730, an all-time high record.

Cooperation Keynote of Hosiery Conference

A COOPERATIVE spirit which promises much for the prosperity of the hosiery industry this year lent particular significance to a two-day meeting, held Feb. 11-12, at the Waldorf-Astoria Hotel, New York. The meeting had been arranged by the National Association of Hosiery Manufacturers with the active support of four other trade associations as follows:

The Full-Fashioned Hosiery Manufacturers of America, the Full-Fashioned Hosiery Association, the Southern Hosiery Manufacturers Association and the Wool Hosiery Institute. More than 300 manufacturers attended the various sessions. Throughout the proceedings, which included discussions and addresses on a wide range of major problems, there was manifest one clear-cut desire, namely to subordinate divisional differences and to present a united front in finding solutions to the chief issues now facing the industry as a whole.

The conference opened Feb. 11 with a public session at which Dr. Willard L. Thorpe, director of economic research for Dun & Bradstreet, gave a simplified interpretation of the complicated provisions of the Robinson-Patman Act as it pertained to the hosiery industry. The outcome of the subsequent sessions, at which the manufacturers showed a degree of interest rare in the history of hosiery meetings, was the formulation of a policy having five major divisions as follows:

Federal Legislation: Outstanding in significance were the policies adopted regarding legislation. The conference favored: reasonable and practical Federally-enforced laws on hours, wages and trade practices; legislation permitting industry to draft regulations of operation, such subject to approval and enforcement by Government; classified occupational minimum wage; 40-hour 5-day week; and flexibility of finishing operation hours.

Standards: Industry will take immediate action to put into effect the standards for inspection and grading of women's full-fashioned hosiery, which standards were approved last year but were held in abeyance pending issuance of trade-marks.

Prices and Profits: Addresses and discussion showed that members felt confident that the industry's era of "profitless prosperity" is nearing an end and that the 1937 prospects point toward increased volume at prices which will permit healthy margin.

Trade Practices: The Federal Trade Commission will be asked to hold a trade practice conference to assist the industry in deciding on rules for the proper marking of goods, such rules to be universally applied when adopted.

Industry Survey: Detailed results of the study recently completed by the National Association, a preliminary outline of which was given at the meeting, are now being prepared in final form and will shortly be available to the trade and the public.

The conference was presided over by William H. Gosch, National Association president, with whom Earl Constantine, managing director, cooperated in directing the sessions.

Hold Code Wages Underwear Urged

ARGUMENT for and against the minimum weekly wage scale of $12 for Southern and $13 for Northern mills in the knitted underwear industry, was presented Feb. 11, at a hearing held by the Public Contracts Board of the Department of Labor, at Washington, D. C. The hearing, which was attended by leading representatives of the industry and the labor organizations, was focussed on wages paid workers engaged in execution of Government contracts coming under jurisdiction of the Walsh-Healey Public Contracts Act. While this represents only a small part of the underwear business—Roy A. Cheney, managing director of the Underwear Institute estimated that it would not exceed one percent—many factors in the trade believe that the decision in this case will bear strongly on later Congressional legislation affecting all underwear mills. For that reason, the hearing was viewed as having far-reaching significance.

Speaking for the manufacturers, Mr. Cheney urged continuance of the $12-$13 minimum, as set in the NRA code and which, he declared, is the present prevailing minimum; he emphasized that the Walsh-Healey Act provides that the minimum wage shall be that which is determined by the Secretary of Labor to be the prevailing minimum. E. J. McMillan, president of Standard Knitting Mills, Chattanooga, and former president of the Underwear Institute, another speaker, testified that the Southern mills could not compete on government contracts unless given a wage differential. Spokesmen for the United Textile Workers asked for an $18 minimum, as set forth in the pending Ellenbogen Textile Control bill.

Rayon Weavers Optimistic on 1937

OPTIMISM as regards both volume and profit prospects for 1937 in rayon woven goods, was the keynote of the annual meeting of the National Rayon Weavers Association, which was held Feb. 9 at the Harvard Club, New York. Those present at the meeting constituted a representative cross-section of the woven rayon fabric industry.

Industry developments during 1936 and the outlook for 1937 were analyzed by C. Whitney Dall, president of the association, in his annual report. Chief issues discussed by Mr. Dall were: the rayon yarn shortage, increasing importance of rayon staple fiber, and the demand by consumer groups for fiber identification of fabrics. Significant points made by the speaker included: While rayon yarn shortage promises to present a physical problem this year, it also is beneficial to weavers since it strengthens prices of both yarns and fabrics. Maintenance of quality in spun rayon fabrics is vital; good finishing and proper labelling are essentials, also service instructions for customers, "so that this new fiber will avoid the old rayon error of building prejudice due to inferior fabrics." Consumer call for fiber identification is sound and this objective is simple—but accomplishment of that objective is very difficult and intricate since it involves giving percentage of fiber which may mean little or nothing to the consumer. . . .

Mr. Dall also suggested that the rayon industry should begin planning an industry-wide Rayon Exhibit for the New York World's Fair in 1939; he proposed the exhibit represent cooperative effort of yarn producers, weavers, knitters, converters, dressmakers, thus telling the story of rayon in all stages of manufacture and use. The association elected Nathaniel F. Ayer, of Cabot Mfg. Co., chairman of the board to succeed R. E. Henry, of Dunean Mills.

Other officers chosen were: T. M. Bancroft of Turney Halsey Co., first vice-president and Paul Whitin of Paul Whitin Mfg. Co., second vice-president. Edward F. Addiss succeeded J. Spencer Love as a member of the executive committee. Mr. Dall was reelected president.

Outerwear Convention Elects Farber

LEGISLATIVE issues, and the growing problem of meeting imports competition were given major emphasis at the annual meeting of the National Knitted Outerwear Association, held March 2, at the Astor Hotel, New York. Two points were stressed at the convention: (a) the need of keeping membership constantly informed on all 1937 legislative development and of taking action, if necessary; and (b) the possible need of presenting briefs to the U. S. Tariff Commission to protect domestic outerwear products from foreign competition. On the second point it was emphasized that imports from Great Britain rose from $467,214 in 1934 to $951,785 in 1936 while those from Japan rose from $120,000 in 1935 to $314,000 in 1936. The annual report of Sidney S. Korzenik reviewed progress made during the year.

Adolph J. Farber, of Friedman-Blau-Farber Co., Cleveland, was elected president, succeeding Ingram Bergman, president of Bergman Knitting Co., Philadelphia. The convention voted to add a division to the association's set-up to represent the Pacific Coast in view of the growing importance of that area in knitted outerwear. This action increases the total of divisions to six. Regulations provide that each division shall be represented by a vice-president, excepting the division in which the president-elect is located. In line with this provision the following vice-presidents were elected: New England—A. Paul Cohen, of Suffolk Knitting Co.; Eastern—Ben Schanzer, of Henry Schanzer & Sons; Pennsylvania—William Portner, of Franklin Sweater Mills; Western—I. B. Davis; Pacific Coast—E. B. Stewart, of Pacific Knitting Mills.

The hotel was a general meeting place for outerwear manufacturers from various parts of the country throughout the day and evening. Prior to the annual dinner, which is the gala event of every outerwear convention, numerous meetings were held. Merchandising policies occupied the attention of the members for much of the day. These policies were discussed at a meeting of the board of directors and also at a special meeting of the swimsuit group. Confidence was expressed in the results of "Swim for Health Week" last year and in the prospects for still greater benefits from the 1937 event, plans for which are now nearing completion.

The outerwear dinner in the evening broke all records for attendance; nearly 1,000 were present as against about 850 last year. John F. Stern, publisher and a veteran affiliate of the association, was toastmaster; he made a brief talk, urging members to promptly advise the association of any attempts at extortion by racketeers. Following that, the evening was given over wholly to amusement and a two-hour theatrical performance was enjoyed.

Wrinkle-Preventing Wrinkles

Practical aids to finisher in avoiding defects in woolens and worsteds

By David Welsh

NOTHING is much more troublesome to the cloth finisher than an epidemic of wrinkles. There are wrinkles of many types and shapes —so bad at times that they add to the wrinkles in the finisher's face. But there is still another kind of wrinkle—those little tricks which enable the finisher to avoid the two undesirable types of wrinkles. The writer has seen his share of wrinkles in woolens and worsteds, but has been fortunate enough to devise a number of ways and means for preventing or eradicating them. Following is the first chapter in the story of "Wrinkle-Preventing Wrinkles."

Wrinkles and mill creases generally develop on tightly woven worsted fabrics made from yarns having more or less of a hard-twist. We have the diagonal wrinkles which do not start anywhere in particular, but run on a slight tangent from center to side, from side to center, and up and down the piece. Then we have the crow's-feet wrinkles; these are ugly little wrinkles running in every direction and are generally caused by overcrowding a washer or by running it too slow, allowing the goods to dwell too long in the bottom of the machine, and doing away with the necessary kick and action of a well-regulated washer. We have fulling-mill wrinkles, washer wrinkles, dye-kettle wrinkles, pressure wrinkles, lay wrinkles, whip lashes, mill creases, etc.

Effect of Weave

The tighter the weave of the fabric, the more susceptible it is to wrinkles. With the same yarn and the same number of ends and picks, the chances of making wrinkles are quite different in a cotton weave, a four-harness twill, and a six-harness twill. The cotton weave, mainly used in making tropical worsteds, will keep the finisher guessing just how to avoid wrinkles. The four-harness cloth runs much better, but is often found to have a tendency toward wrinkles. The six-harness fabric put through the identical processes as the cotton weave and the two-and-two twill will not show a sign of a wrinkle.

The same comparison may also apply to the three main grades of wool stock; viz., ¼ blood, ⅜ blood and ½ blood. The coarse ¼ blood made into almost any type of fabric will keep the finisher busy trying to prevent wrinkles. The ⅜ blood in a four-harness twill is also easily wrinkled. The ½ blood will sail through unscathed, except in a fabric with over 60 picks to the inch and corresponding ends. Plain serges up to 14 oz. per yd. run through very nicely; above that weight they are so tightly woven that they crack easily in processing and are likely to be badly wrinkled.

When the finisher finds that any particular fabric shows a tendency to wrinkle, there are several things that he can do to overcome it. If he is satisfied that the wrinkles are made in the fulling mill, use of a soap with a heavier body and a reduction of the alkali content will often accomplish wonders. The fulling solution can always be changed to meet conditions, and use of the right proportions of soap and soda ash will solve many problems. For example, a heavier soap has a cushioning or softening effect that quickly eradicates wrinkles, even after started.

Prevention of washer wrinkles on goods which are not fulled depends on the method of scouring. Heavy serges are easily wrinkled in the cloth washer, so much so that the method used on many goods will not suffice for serges. It may be found, for instance, that low-titre soaps lack the necessary body to furnish the cushion required to soften a serge and coax out the wrinkles. Just enough alkali or soda ash to saponify the particular oil used in lubricating the stock should be used; an excess so hardens the stock that the forming of wrinkles is easy.

Ladder Guide Board

In addition to modifying the chemical constitution of the scouring baths, the finisher can make a number of mechanical changes in the washer which will assist in preventing wrinkles. One such change is to substitute a ladder guide board for the usual ring board, as shown in the accompanying sketches. The rungs of this horizontal ladder can be made from brass piping or rods, which, for serges or other tightly woven goods, are spaced 1½ or even 1¼ in. apart. The cloth running through these narrow elongated spaces is forced on its side and practically made to change its position every time it comes up to the squeeze rolls, giving the rolls a chance to rub or squeeze the wrinkles out. Another important advantage is the fact that the rolls will not wear out in ridges as with the immobile pot eye ring board. In a regular eight-string washer with the rungs of the ladder guide board spaced 1½ in. apart, there will be available for use over 30 spaces at every loading.

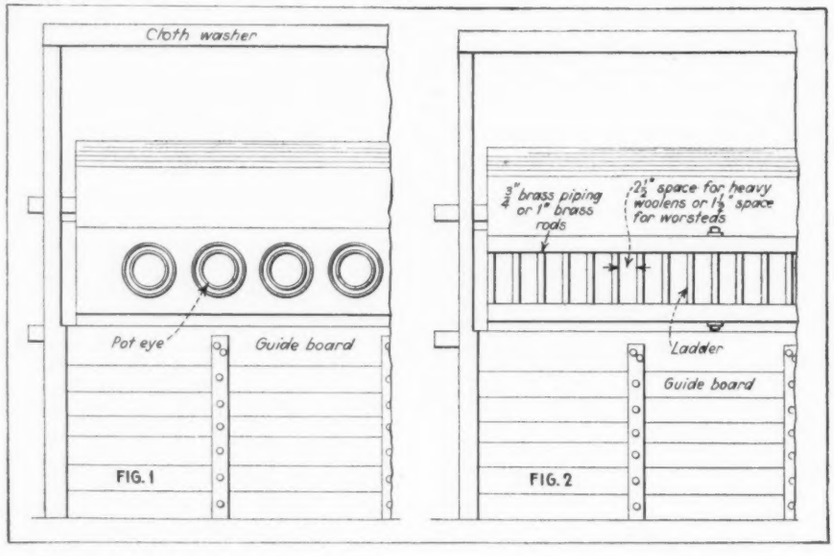


Fig. 1. Section of washer with usual pot-eye guide board

Fig. 2. Section of washer fitted with ladder guide board

Brushed Finish

Gives new interest to knitted rayon in winter underwear

By L. A. Jordan

UNTIL a year or two ago it was not considered possible to brush knitted rayon fabrics without greatly reducing their durability. It was found, however, that careful control of the brushing operation avoided any great damage to the goods. Rayon warp-knit fabrics were given a brushed finish. made into women's underwear. and subjected to tests. Repeated washings failed to loosen the brushed-up fibers, and the fabrics proved entirely satisfactory in wear. Since they were first placed on the market. undergarments made from brushed rayon knit goods have gained in popularity for winter wear, and they are expected to be even more important next winter.

On comparing a roll of fabric before and after brushing on the back side, one is immediately struck with the increased bulk of the brushed fabric. By brushing, the fabric is given a silky pile and is made at least twice as thick as it was originally. Furthermore, brushing imparts a soft. luxurious handle not obtained by the use of softeners or fillers. The garments have a soft, snug, and warm feel.

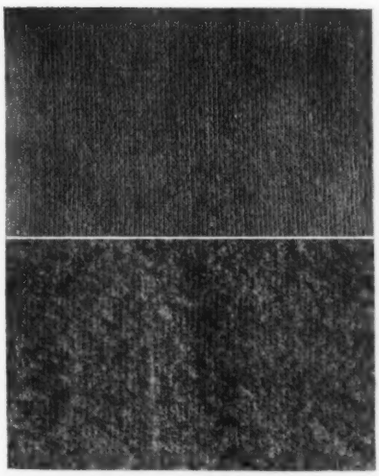


Fig. 1. (at top) Warp-knit fabric before brushing.

Fig. 2. (at bottom) Same fabric after brushing.

Equipment Employed

In the development of brushed rayon fabric, it was soon discovered that the usual types of emery-covered rollers and teazles were useless. The emery-covered rollers, such as are useful for sueding cotton glove fabrics, do not appear to get sufficient grip on a rayon fabric. The result is irregular, and the length of pile that can be raised is quite insignificant. Furthermore, the wale "ridges" of the knitted fabric are scratched so much more than the adjoining "valleys" that the ultimate appearance is more in the nature of a ribbed effect. On the other hand, teazles are much too drastic and impoverish the fabric so that it approaches a muslin material.

The type of brushing machine ordinarily employed is one which comprises a large number of rotating rollers covered with wire carding and which is largely used for brushing cotton fabric. Experience indicates that success in brushing knitted rayon fabric lies in using fast-rotating rollers (covered with wire carding) and a light contact of the fabric with these rollers. On no account should it be attempted to raise the pile too quickly. The fabric should be run over the machine at least twice in order to raise sufficient pile. With some fabrics, especially those knit from acetate yarns, it is better to so adjust the brushing that three or four runs are necessary. [Another type of equipment which has been developed especially for producing a nap or pile on fabrics made from continuous-filament rayon consists essentially of a series of individually adjustable abrasive rollers under which the cloth passes while held on a spongy, clinging, pneumatic bed which holds it in both length and width.—*Editor*]

As previously mentioned, knitted fabrics with a pronounced wale may cause trouble, because the ridge secures too great a degree of brushing, while the valley is insufficiently brushed. In fact, some fabrics of this type are unsuitable for brushing. Where the wale causes trouble, it is possible to mitigate this to some extent by first giving the fabric a light calendering or pressing, whereby the surface is temporarily flattened. This treatment should not be overdone, since, if the fabric is made too flat and thin, there is a considerable risk of the brushing wire piercing through the fabric and damaging it.

Brushing can be effected while the fabric is open to full width or while it is in tubular form. In the first case, a higher output is obtainable; but it is risky, owing to the difficulty of maintaining the fabric flat on the brushing machine. On the other hand, while it is safer to brush the fabric in tubular form, a double passage over the machine is necessary to achieve the same result as with open-width brushing. Generally it is recommended to have the fabric in tubular form; with the lower-quality fabrics, no other method should be attempted.

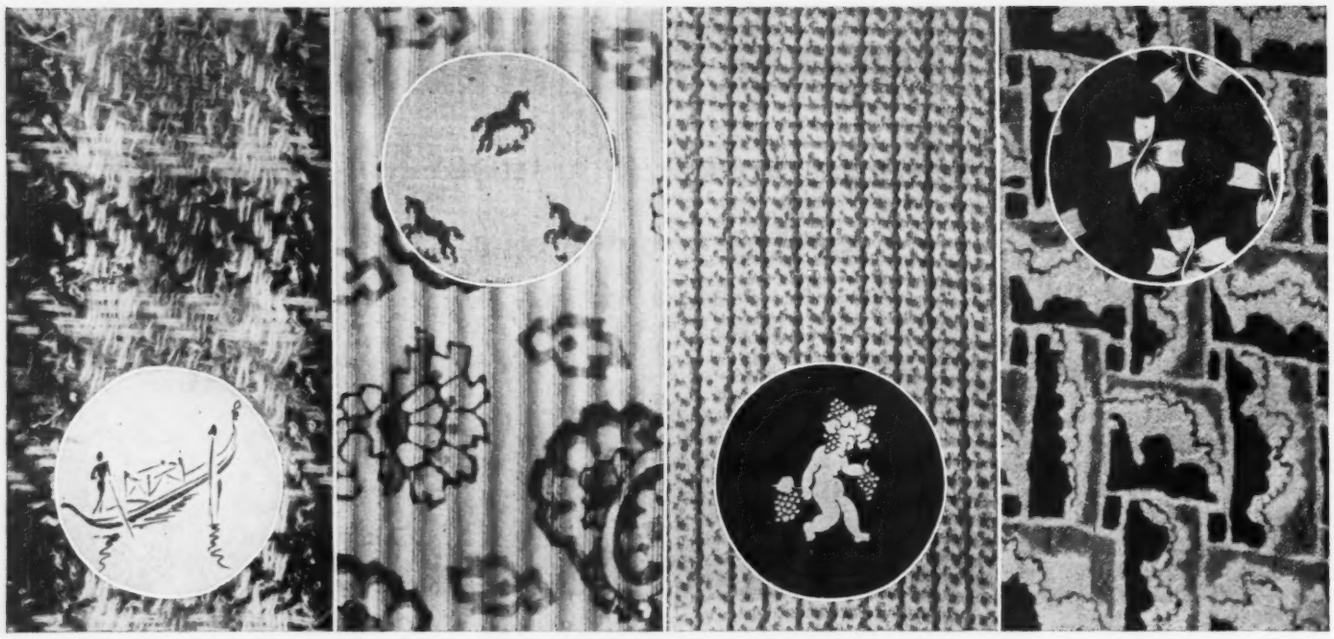
When to Brush

The success which attends brushing is largely due to the construction of the fabric and the type of rayon of which it is made. The finisher will only get into trouble if he attempts to brush a fabric which is too thin for the purpose. On holding such a brushed fabric up to the light, he will see through it as though it were full of pin pricks. Such a fabric will not be sufficiently durable and will give rise to serious complaints. A rayon fabric 48 in. wide which measures 2 to 2½ yd. to the lb. will give good results; a fabric measuring 3 yd. to the lb. can be brushed satisfactorily, but it is more risky.

Fabrics made from fine filament rayon are far superior to those made from coarse filaments. The reason for this is obvious; the finer the filaments, the more likely are they to be caught and scratched up by the brushing machine, and the more fluffy is the resulting pile. Knitted fabrics made from yarns in which filaments of 4 to 6 denier are present do not brush well, but excel lent brushing can be produced when the individual filaments have a denier of 1 to 2.

Viscose rayon appears to brush better than acetate. The reason for this is not obvious; but perhaps it is because acetate rayon is more ductile than viscose and thus stretches, rather than breaks, when it is subjected to the action of the wire carding. Cuprammonium rayon brushes very well.

After brushing, the fabric should not be calendered too heavily, since this crushes the pile. The minimum pressure should be used and the bowls of the calender should be nearly cold. Under these conditions, the pile stands out well and the brushed finish is at its best.



Diversity in colors, patterns and textures is keynote of new

French Offerings

By Betty Hirschberg
Paris, France

FRENCH fabric openings for summer wear which took place in February brought an unusually scintillating deluge of diversified styles. Out of the multiplicity of novelties come several main themes—Prolific use of many colors, often in one fabric; increasing sense of drama in designs and use of either rather small patterns or rather large ones; restriction of novel surface treatments and textures to the smaller effects.

In the matter of color a veritable mania seems to have seized the creators. Lines of plain materials of Rodier, Meyer, Lesur are miracles of color which run to over 150 tones. This amazing variety is not confined to plain fabrics. Olré shows a plaid crepe on which 95 colors can be counted! Carlin has a flowered material in 21 tones. Prints in so-called "church window colors" are equally surprising. Many new lacquer prints are shown.

Patou has chosen as summer mode colors "Bleu Romance," a bright lavender blue, "Rose de France," the pink of the La France rose and "Ombre bleue," a sober ombre blue. Rochas showed models dressed in silks with wide and narrow colored stripes, in which none of the colors was repeated around the garment. One found in many offerings those glaring colors that bring to mind country fairs or children's simple toys.

Among the summer woolens for dresses light crepes and voile-like textures occupy the leading place. Meyer's wool crepes have small hanging yarns with curl-like loop stripes in relief or with a netting of scarcely perceptible bright hair. Plaids and checks play an important role for use with plain fabrics. At times the checks are so large that they occupy nearly half the width of the fabric. Nubby effects give the pattern a slight relief. Meyer shows tweeds with little knots in pastel colors, and shot with nubby yarns and small curls of white mohair.

Chatillon Mouly Roussel introduces the "Patrick" material group in the most varied designs, checked, with rabbit hair, and with patterns copied from clan plaids. Etamine-like and open-work wools are strongly represented. Rodier mixes wool and silk in his "Hella," a promising afternoon-dress material.

There are many novel motifs in printed materials. "The Earthly Paradise" is the name given by Chatillon Mouly Roussel to a silk satin, the pattern centering on a very modern Eve. A. Godde Bedin (Tissus A. G. B.) gives to a rayon "Tempête" (Stormy weather) the outlines of a storm scene, a woman with hair and skirt waving in the breeze. Carlin uses in his designs little gods, Bacchus, Pan with the pipe, heads of generals. Castelain has graceful dance scenes in national costumes, peasant and Alpine motifs which have met with great success as print patterns.

Flower designs are very large or very small and preferably in stripes and borders. Mention must be made of the so-called "loving flowers," which in pairs bend their little heads to each other, the stems being intertwined.

Rochas caused much amusement with a silk gown which was printed with green artichokes and little red hearts. Rochas also showed a costume the printed pattern of which comprised little open books. To make the thing quite complete, Rochas put on the jacket revers of printed pages made of silk which could be turned over and read.

Chatillon Mouly Roussel brings out a substitute for crepe georgette in "Moussalina," a sort of cross between silk mousseline, crepe de Chine and georgette, which goes into fine night lingerie.

Piqués, linens, embroidered materials continue to enjoy increasing favor. Piqués of varied materials and patterns form the leading note in the A. Godde Bedin collection. Rayon piqué comes figured, in checks, dots, narrow and wide wale stripes and plaid designs.

Of linen-like character are the mixed fabrics of Castelain made of rayon and cotton, effectively printed.

THE ILLUSTRATION shows (from left to right) a novelty tweed; a printed pique; a blister effect; a printed crepe. The circles show typical small motifs—a gondola printed on satin; horses on a double woven fabric; Bacchus resist print; a formal multicolor print.

Rejuvenated Boilers

Various methods now available for increasing output of old equipment

By N. T. Pef

INCREASED demands for steam in textile mills do not necessarily call for the installation of new boilers. Frequently old boilers can be rejuvenated at a comparatively low cost and stepped up to give from 100 to 500% greater output. There are a number of ways by which boiler capacity can be increased; but before going into specific methods, let us first consider briefly the boiler in comparison with other machines in the mill.

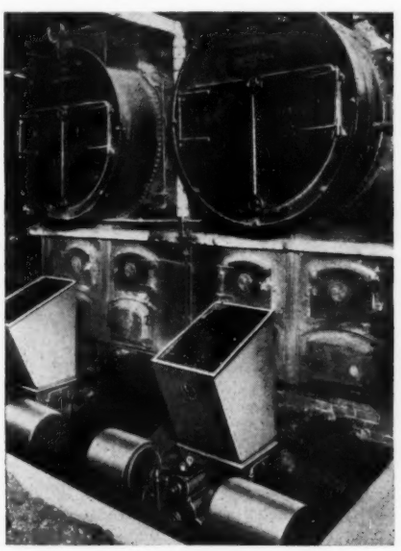
The boiler as a machine is different from other machines in that its capacity limits are very elastic. If an engine, turbine, motor, etc., is rated at 500 hp., that rating fixes the upper limit, with possibly an additional 100 hp. as overload for short periods. But with boilers it is different. A 500-hp. boiler can deliver 1,000 hp., or even 5,000 hp., and do it continuously. The reason for this great range of boiler capacity is the fact that the ability of a metal to absorb heat is not a fixed quantity, but is dependent on the temperature difference between the two surfaces of the metal. By increasing the temperature difference, one can increase the capacity in the same proportion.

When the temperature of the flue gas leaving the boiler is 100°F. above the temperature of the saturated steam, the output of the boiler is about 3.5 lb. of steam per sq.ft. per hr. A boiler operating under these conditions, with 100°F. temperature difference, will give normal output; that is, a 500-hp. boiler will deliver 500 hp. However, if the fires are forced until the temperature difference is 200°F., the same boiler will generate 1,000 hp.

There are many methods of expanding the output of a boiler, but probably the most common way of accomplishing this is by increasing the air supply or fuel supply or both. For example, many hand-fired boilers have been increased 50% in capacity merely by installing a forced-draft fan. Others have had their capacity doubled and efficiency increased by installing stokers and mechanical draft. Also, changing to a more efficient fuel will give greater output of power. The more common accessories for increasing capacity include stoker, stack, induced- or forced-draft fans, economizer, air heater, superheater, furnace water walls, etc. Obviously, these methods and accessories are designed primarily for application to old hand-fired boilers; but there are also numerous ways in which stoker-fired boilers can be stepped up.

Before any mechanical changes or additions are made with a view toward increased capacity, it is essential that a careful study be made of present and potential boiler capacity. After that, the first step is to determine whether or not the fuel feed and air supply are balanced. For example, if all the fuel that can be fed cannot be burned with the dampers wide open or the draft fans running full speed, there is a deficiency of air. In this case, the output of the boiler can be increased by a taller stack or by installing draft fans. On the other hand, if the fire tends to get short with the dampers wide open and the coal feed running full speed, there is a deficiency of fuel. In this case, the output of the boiler can be enlarged by increasing the fuel supply by means of a larger stoker or by using a fuel of higher heat content. Or, when the fuel is pulverized coal, oil, or natural gas, a deficiency of fuel is indicated by a short flame, and can be augmented by installing either additional burners or burners of higher capacity. Air and fuel are said to be balanced when, with both running full speed, the CO_2 content is 13% for coal or oil and 10% for natural gas—with no unburned fuel remaining.

The next step in the investigation is to make a study of the flue-gas temperature. If the flue-gas temperature is less than 100°F. (or even 200°F.) above the temperature of the saturated steam, the boiler has reserve capacity, which can be obtained by increasing either the fuel or air supply, or both.



The efficiency of a boiler is reduced about 3 to 5% for every 100°F. rise in flue-gas temperature. When increasing of capacity has resulted in high flue-gas temperature, this can be offset by the installation of an economizer or air heater. Under average conditions, these accessories should give an added capacity of about 10%, and should also increase efficiency to the same extent.

The structure of many boilers will permit the installation of a superheater without any changes in the setting. Where super-heated steam can be used to advantage, it will increase the capacity of the boiler by about 5% for each 100°F. of superheat, and will give slightly better efficiency.

Still another way of increasing the capacity of a boiler is by the installation of furnace water walls, although of course the primary purpose of water walls is to protect the furnace refractory.

In many markets, the price of coal is proportional to the heat content; that is, if a coal of 10,000 B.t.u. sells for $3, a 14,000-B.t.u. coal will sell for $4.20. Under these conditions, by changing to the higher-priced coal, the capacity can be increased 40%, with the coal bill remaining the same. However, the draft must be sufficient for the additional heat liberation, as the 14,000-B.t.u. coal would require 40% more air. In localities where oil and natural gas compete with coal in price, the boiler output can often be increased by changing to one of these fuels, and, as a rule, an increase in draft is not necessary, since there is no fuel-bed resistance to overcome.

One of the latest developments in power-plant rejuvenation is the installation of the so-called "top plant." It consists essentially of the installation of one or more high-pressure boilers, together with a non-condensing turbine to use the steam produced by that equipment. This method of meeting increased demands for steam and power has been in use for some time in other industries and is now beginning to find application in textile mills.

Conditioned Water

Stringent requirements at Kent Mfg. Co. met by modernization of existing filter plant

By Albert Rose,
G. A. Weinhold,
S. B. Applebaum

SINCE its founding in 1843, Kent Mfg. Co., Clifton Heights, Pa., has been taking the water from Darby Creek for use in the manufacture and finishing of woolens and worsteds. The creek bed is composed of a clay and rock formation and receives the run-off water from miles of a valley with high, steep sides. The character of the water, therefore, changes suddenly with every rainstorm. We have found a variation in turbidity of the water from 60 p.p.m. to 2,000 p.p.m. in an interval of 2 hr. The range of free carbon dioxide has been from 0 to 12 p.p.m. and the alkalinity from 12 to 42 p.p.m. We have had a phenolphthalein alkalinity of 8 p.p.m. The pH has varied from 6.6 to 8.3.

The water from Darby Creek has been treated for textile purposes at this mill for many years, but the demands, both from a quantity and quality standpoint, increased with time. Consequently the original water-treatment plant became too small and out of date to handle the amounts of water required and to produce a water clear enough and soft enough to meet the new, more stringent requirements. Irregular and erratic results were obtained, which caused trouble with scouring, washing, and dyeing. On one occasion the alum that was used in coagulation passed through the settling basin and filter plant into the final supply and spoiled a great number of pieces of cloth. Therefore, about two years ago the water-treating plant was enlarged, revised, and modernized to its present status.

The improvements made were as follows: (1) New proportionating alum, alkali, and sulphuric acid feeds were installed to introduce the correct amount of coagulant and alkali and also to proportionate the dosage to the flow of water and maintain the proper pH value for optimum coagulation at all times. (2) A mechanical floc accelerator was installed in a separate tank ahead of the settling basins. (3) The settling basin was properly baffled, so that the water would take several hours to pass through the tank and avoid short-circuiting and channeling, as well as localized high velocities which previously disturbed the sludge and caused turbid water in the effluent of the settling tank. (4) An additional filter was installed. (5) Zeolite softeners were installed.

The present plant consists of the following equipment: (1) proportionating chemical feeds, (2) a 100,000-gal. settling tank properly baffled, (3) a mechanical floc accelerator, (4) three horizontal pressure filters, 8 ft. in diameter and 20 ft. long, (5) two zeolite softeners, having a capacity of 720 g.p.m., (6) two soft-water storage tanks having a capacity of 85,000 gal., and (7) one hard, but filtered, water storage tank of 35,000 gal. capacity, which is used for backwashing purposes.

Figs. 1 and 2 give the equipment arranged in a flow diagram. Fig. 1 shows the coagulation equipment and Fig. 2 the filter and softener equipment.

If the amounts of chemicals fed are insufficient, the turbidity and color in the raw water are improperly coagulated and the effluent of the water-treatment plant will be high in turbidity and color. If too much chemical is fed, resulting in an improper pH value, not only will chemicals be wasted, but the effluent will again contain alum and some of the original turbidity and color. The electro-chemical feed now in use, which has been in successful operation for about two years, is the heart of the water-treatment plant.

On the main water line between the mill race and the filter, as shown in Fig. 1, a water meter is located provided with contact switches so arranged that after the passage of 2,000 gal. of water through the meter, an electric circuit is established. This starts a fractional horsepower motor in the electro-chemical control unit, which, through a gear drive, unwinds a cable on the drum to lower a swing pipe in the chemical solution tank. This swing-joint pipe skims off a certain depth of chemical from the top of the tank sufficient to treat the 2,000 gal. When this depth has been skimmed off, a circuit breaker, directly driven by the same fractional horsepower motor just described, breaks the circuit and ends the cycle. Then when the next 2,000 gal. passes through the meter, this cycle is repeated.

The control unit can be adjusted at will to change the speed with which the swing pipe is lowered. Therefore, when it rains and the creek water gets more turbid, so that more alum and alkali must be fed, the operator, by fingertip adjustment, changes the setting of this control unit, so that the amount of alum and alkali can be increased at will and instantaneously. The setting has a scale which permits the operator to see how fast he is lowering the swing pipe.

By laboratory experiment and by the actual experience with the water treatment plant itself, it was found that the Darby Creek water coagulates best if the chemicals are so controlled and ad-

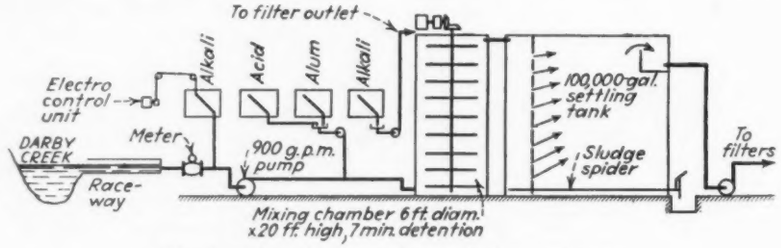


Fig. 1. Flow diagram of coagulation equipment

***WATER-TREATMENT PLANTS** installed ten to twenty years ago are rapidly becoming out of date. It is possible, however, to remodel such plants to meet the rigid, present-day requirements for water for process work. The following article describes how one textile mill modernized its filter plant and discusses the results obtained. Among the authors, Mr. Rose is chemist at Kent Mfg. Co., Clifton Heights, Pa.; Mr. Weinhold is an engineer with Permutit Co., New York and Mr. Applebaum is vice-president of Permutit Co.*

justed that the effluent has a pH value of from 6.3 to 6.5. When the adjustment and the proportionating of the chemicals are carefully controlled so that the pH value falls within this very narrow range, a large, heavy floc is immediately obtained in the settling tank, and the settled water shows a tremendous improvement both in turbidity and color as compared with the raw water, leaving only a small amount of turbidity and color to be removed by the filters. If the pH value of the final water is either below 6.3 or above 6.5, the floc particles are too fine to settle out properly. The settled water then assumes a smoky or milky aspect typical of improperly coagulated waters, and the burden of clarification is thrown from the settling basin on to the filters and softeners; even then, if the coagulation is improperly carried out, some turbidity and color may slip through into the final treated water. Fig. 3 shows the per cent of floc that settles out in the settling tank if the pH is properly controlled and shows the effect of the mechanical floc accelerator in accelerating the formation of a large, heavy floc. The curves in this figure show both effects.

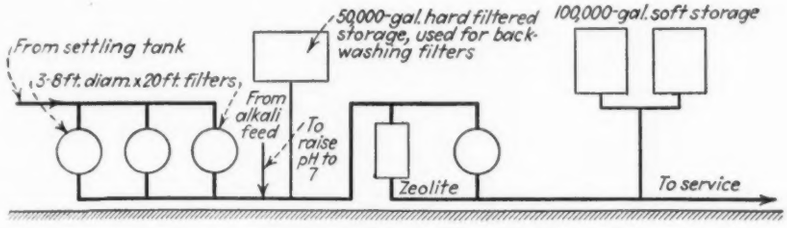

From settling tank
3-8 ft. diam. x 20 ft. filters
50,000-gal. hard filtered storage, used for back-washing filters
100,000-gal. soft storage
From alkali feed
To raise pH to 7
Zeolite
To service

Fig. 2. Flow diagram of filters and zeolite softeners

Table I gives the chemical results obtained by analysis of the raw water, filtered water, and softened water for the average condition. Table II shows the chemical results on the raw and filtered water and the amounts of chemicals required for various seasons of the year and for various turbidities. It is to be noted that in the winter average condition, when the turbidity in the raw water is about 50 p.p.m., the amount of alum required is only about ½ grain per gallon and the amount of acid required is ¼ grain per gallon. In the average summer condition, when the turbidity is around 100 p.p.m., the alum required is ¾ grain per gallon and the acid 0.6 grain per gallon. In the rainy season, when turbidities run between 800 and 1,800 p.p.m., the amount of alum required ranges between 1 and 2 grains per gallon and at this time it is necesary to add caustic soda to the extent of about ⅜ grain per gallon in order to obtain the proper pH value in the final water of about 6.5. This is due to the fact that at times of heavy rain, the alkalinity in the raw water is quite low and is insufficient to react with the higher amount of alum required to coagulate the higher amount of turbidity present. At the bottom of Table II the effect of adding 1 grain of caustic soda, 1 grain of alum, and 1 grain of acid, as regards alkalinity and free CO_2, is given. This is useful to the operator in checking up on the dosage of reagent.

From the flow diagrams, Figs. 1 and 2, it will be noted that the alum, caustic, and acid are all added into the floc-accelerating chamber. The caustic can also be added after the filters for the purpose of raising the pH value at that point to over 7 and thereby help inhibit corrosion of iron piping.

The purpose of the acid is to lower the pH value to 6.5 when the alkalinity in the raw water is higher, as in the average winter and summer condition, and thus obtain optimum coagulation.

The sludge is removed from the settling tank at intervals of a few hours apart, by opening the gate valve on the perforated sludge spider in the bottom of the settling tank. This sludge spider has holes 2 ft. apart all over the bottom of the tank and thus sludge is drawn off evenly from all parts of the tank and is thus prevented from accumulating and building up. With improper sludge removal, the amount of sludge thus accumulated frequently interferes with the obtaining of properly settled water, inasmuch as sludge is disturbed and picked up by the currents of water through the tank and escapes with the settled water. It is important, therefore, to have a proper sludge spider and to operate it at proper intervals.

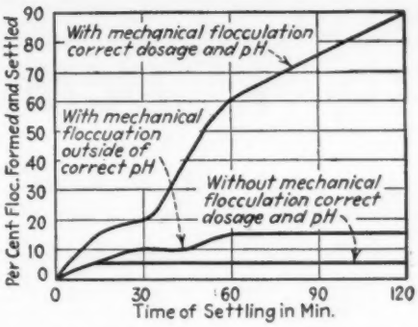


Fig. 3. Settling time of floc in minutes with and without mechanical flocculation

The small amount of floc and turbidity that is not settled out in the settling basin is removed by the filters. The effluent of the filters always has zero turbidity and color under 5. The filtered water then passes through the zeolite softeners, which remove the hardness completely.

Table III gives the chemical cost for the year 1935. It separates the cost into two parts. First, the chemical cost for coagulation; and second, the chemical cost for zeolite softening. It gives the amount of water filtered and the amount of water softened, as well as the total pounds of each of the chemicals employed. Thus the total cost of coagulating and softening this rather difficult Darby Creek water is less than 1.3c. per thousand gallons.

The two-year record of results obtained with this superior water has more than justified the expenditure by the saving in supplies and by the elimination of irregular results in the various phases of processing.

TABLE I. Typical chemical results obtained—results in p.p.m.

	Raw water	Filtered water	Softened water
Total hardness as $CaCO_3$	60	60	0
Alk. A. Methyl Alk. as $CaCO_3$	30	20	20
Free CO_2 as CO_2	6	5	5
Chlorides as Cl	12	12	12
Sulphates as SO_3	15	20	20
Iron as Fe	0.5	0.1	0.1
Turbidity	200	0	0
Color	50	5	5

TABLE III. Chemical costs, 1935

Gal. water filtered	Gal. water softened	Lb. caustic soda
216,579,000	153,301,500	8,183
Lb. alum	**Lb. acid**	**Lb. salt**
24,237	6,940	280,100

Chemical cost for coagulation per 1,000 gal.

Alum	0.11 lb. at 1.7¢	=	0.187
Caustic	0.038 at 3.3	=	0.125
Acid	0.033 at 1.35	=	0.044
			0.356¢ per 1,000 gal.

Chemical cost for zeolite softening per 1,000 gal.

Salt 1.83 lb. at 0.5¢ = 0.92¢ per 1,000 gal.

TABLE II. Amounts of chemicals and chemical results at different seasons—chemical results in p.p.m.; chemical dosage in grains per gallon

	Raw water				Filtered water				Chemical dosage		
Season	Turbidity	Alk. A	CO_2	pH	Turbidity	Alk. A	CO_2	pH	Alum	Caustic	Acid
(1) Spring thaw	800	12	8	6.6	0	11	9	6.4	1.0	0.375	0
(2) Clearing spring thaw	200	23	5	7.0	0	17	11	6.5	0.75	0	0
(3) Winter average	50	29	4	7.2	0	21	12	6.55	0.5	0	0.25
(4) Summer	100	42	1	8.2	0	25	16	6.5	0.75	0	0.6
(5) Rainy	1,800	26	5	7.0	0	17	12	6.4	2.0	0.375	0

Note: 1 grain per gallon equals 17.1 p.p.m.
1 grain of NaOH (Caustic) per gallon increases Alk. A 19 p.p.m. decreases CO_2 18 p.p.m.
1 grain of alum per gallon increases CO_2 7 decreases Alk. A 8
1 grain of H_2SO_4 (Acid) per gallon increases CO_2 14.5 decreases Alk. A 16.1

When Knitters Disagree

J. F. Cahill returns to our columns to debate knit pattern fields with J. B. Lancashire

THOSE READERS in particular who enjoyed the series of articles by J. Frederick Cahill on designing circular-knit fabrics (TEXTILE WORLD, 1932 to 1935) will be interested to read these two letters from him commenting upon a recent article and letter by J. B. Lancashire on the subject of knit-pattern fields.

TECHNICAL EDITOR: In the article by J. B. Lancashire in the TEXTILE WORLD issues for October and November, 1936, I was particularly interested in that section referring to the possibility of using pressers of 100 cuts divided into 5 presser divisions and reproducing the same design on machines containing 480, 660, and 840 needles respectively. As proof of this possibility Mr. Lancashire presents algebraic formulas which, in my opinion, only becloud the issue and make the statement of facts only less comprehensible to the man at the machine. I admit the facts and agree that it is entirely possible to conform to this seemingly difficult condition and am stating my version of the process.

With 480 needles and a presser of 100 cuts, the number of needles divided by the number of cuts in the presser leaves a remainder of 80, which is usually considered as being "minus 20." Suppose on the other hand, we consider the result as being "plus 80." Then one revolution of the cylinder will cause the presser to rotate 4.8 revolutions.

With a 5-division presser and any number of needles, 5 revolutions of the cylinder is required for a vertical repeat of the design. The design in question is assumed to have a width of 20 needles, and a cylinder of 480 needles will divide by 20 into 24 design columns. Five revolutions of the cylinder will rotate the presser 5x4.8, or 24 times—24 full revolutions, which is equal to the number of design columns.

With 660 and 840 Needles

In the case of 660 needles divided by 20 we get 33 design columns, and a presser of 100 cuts divides into 660 needles 6 times with a remainder of 60, which may be considered either 60 plus or 40 minus. As, in order to find the exact number of revolutions of the presser to one revolution of the cylinder, it is better to consider all pressers as plus pressers, this case should be considered as plus 60. Then 1 revolution of the cylinder makes the presser turn 6.6 revolutions; and 5 revolutions of the cylinder (required for vertical repeat) turns the presser 5x6.6 or 33 full revolutions to equal the number of design columns in the cylinder.

In the case of 840 needles and 42 design columns, a presser of 100 cuts is plus 40 needles or 2 design columns of 20 needles each. The presser divides into the cylinder 8.4 times, and 1 revolution of the cylinder rotates the presser 8.4 times. Five revolutions of the cylinder (5x8.4) makes the presser turn 42 full revolutions, the number of design columns in the cylinder; and the first row of the design makes its impression in each one of the design columns within 5 revolutions of the cylinder.

But, to what advantage? This has long been known, but the difficulty that the average knitter finds in locating the proper division of his pressers in which to cut the different rows of his design has long ago relegated the method into disuse; and the commonly used method of 1 division plus or minus, which works in all cases and works the same in all, has supplanted it.

I raised quite a storm of protest several years ago by stating that exactly 1 division plus or minus was not an absolute necessity in the case of a herringbone design made on a machine with 4 design feeds; but at that time I did not state that it was a necessity in the case of a machine equipped with less than 3 design feeds.

There can be no advantage in this method in the direction of reducing the diagonal disposition of the design in the fabric, and as evidence of this I am showing a diagram of the result in the case of 480 needles, 660 needles, and 840 needles. In the case of 480 needles, which is a case of 1 division minus, the diagonal takes a gradual slope downward to the right (as viewed from the face side of the fabric). In the case of 660 needles, which is 2 divisions minus, the effect of the diagonal is entirely different. Finally, in the case of 840 needles, which is 2 divisions plus, the effect of the diagonal is directly opposite to that of 660 needles.

In the diagram no effort has been made to preserve the proportion of width and height (or depth) of the design fields; and, as a consequence, the diagonal effect is much exaggerated. The heavy lines are to represent the first rows of the design, and the light lines are to represent the remaining 19 rows of the design. The figures on the heavy lines show the revolution of the cylinder at the end of which the first row makes its appearance in the fabric.

Referring again to the difference in the diagonals between that made by 660 needles and that made by 840 needles, it will be noted that 660 needles is a case of 3 divisions plus or 2 divisions minus, while 840 needles is a case of 2 divisions plus or 3 divisions minus—a reversal of plus and minus signs and a reversal of the diagonal effect.

Which effect is best or most desirable is not for me to say.

Rectangular Design Fields

As to "rectangular design fields," I do not recognize any other form. A figure in a rectangular design field may be encompassed by as many sides as the principles of knitting on circular machines permit; and it may have arms, tentacles, or extensions that invade adjacent design fields either vertically or horizontally.

However, when such an invasion occurs, the invading portion of the figure immediately becomes the property of the invaded field; and the prints and tucks required to reproduce the invading portion are then required to be shown on the opposite side of the original field. The level at which such portion re-enters the field is, of course, dependent upon whether the presser is plus or minus and upon the number of feeds. Such invasion, however, does not alter the shape of the design field.

Returning once more to the topic of the diagonal or spiral disposition of figures in a patterned knit fabric made on a circular knitting machine, the nearest approach to a non-spiral design is in the case of a herringbone design made on a machine with three or more design feeds; and even then there is a depth of three courses between a course just being laid in and a course that was laid in at the same point on the cylinder in the preceding revolution. A spiral course connects the two points. And as the number of design feeds in-

creases, the knit depth increases in the same ratio until with 16 design feeds there is a depth of 16 design courses between a course just being laid in and a course that was laid in by the same feed at the same point in the preceding revolution, and a continuous spiral course connects the two points.

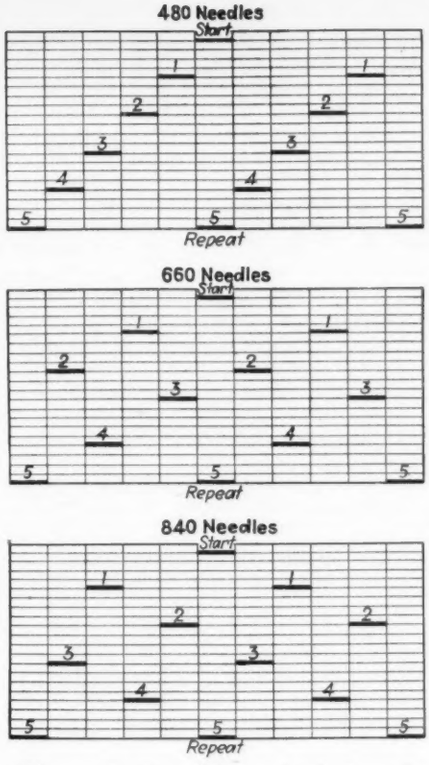
In the article under discussion mention was made of the possibility of generating the first rows of a design at one feed and the remaining rows at successive feeds. This is an entirely feasible suggestion, though it would limit the height (or depth) of the design to the number of feeds with which the machine is equipped. Even at that, however, the figures would be spirally disposed, because in one revolution a completed figure would appear at the feed immediately preceding the feed generating the first rows, while around the entire circumference of the cylinder would be designs in the course of construction, each one with one design course less, until at the generating feed a first row would be (in the case of a 16-design-feed machine) 16 courses away from a first row just being laid in, and a spiral course would connect them.

When it comes to straight-line knitting of designs on a circular knitting machine, the nearest approach to such an end can be attained on a machine with one design feed, as the amount of spiral effect is limited to one design course; but the production is extremely limited.

The same effect can be produced on a circular jacquard knitting machine by generating first rows simultaneously at each feed; and the same effect could be produced on a machine using wheels or pressers by a process of stripping the setting and re-setting each wheel or presser while in motion. This is by no means a mechanical impossibility, but its economical possibility is extremely doubtful.

In the knitting of tweeds on a circular machine, where every care is taken to avoid a repeat of any kind, there is always a tendency to spiral shading in the fabric as it turns on the machine and a suggestion of diagonal effect in a piece laid out for inspection.

I note also in the article a suggestion of the possibility of using two pressers in the production of reverse diagonals, and apparently it is suggested that they be used on the same feed. In support of this suggestion an instance is cited wherein two wheels are used on a hosiery machine producing designs by the selective plating method. Is the gentleman suggesting that a principle that will work satisfactorily on a machine producing a design by selective plating will work equally well on a machine producing a design by the tuck-and-float method? A specific instance of such a method would be very interesting; and it should be stated whether or not the diagonals were one or two needles wide and how far apart at the



Diagonal disposition of designs in fabric.

crossing and whether the pressers could be made with prints to knit off at the feed equipped with two pressers or with cuts to produce tucks to be knitted off at the succeeding feed.

I shall look with interest for a discussion of this subject.

J. Frederick Cahill

Not Mr. Cahill's Rule

Technical Editor: In the issue of Textile World for January, 1937, I find a letter from J. B. Lancashire in which the rule of a lap of one pattern division plus or minus in the knitting of designs on circular knitting machines by means of wheels or pressers is referred to as "Mr. Cahill's rule." The rule is not mine—that is, I did not originate it, as it was in use when I began my experience with pattern knitting. Whoever was the first to use it I do not know.

The letter also stated that the rule was based on the "assumption" that the first row "must" appear in an adjacent design column at the end of one revolution of the cylinder.

Design knitting was in practice on loop-wheel machines long before a systematic method of calculation for exact presser diameters was evolved and knitters made a practice of the "cut-and-fit" process largely to see what would happen from a change in diameter of pressers or a change in the number of needles in the cylinder. Interesting effects were produced from a beginning of vertical stripes, and the recognition of design columns in the fabric and design divisions in the presser brought about the selection of one division plus or minus (or, as Ernest Tompkins expresses it in "Science of Knitting," overlap or underlap) as the most easily understandable method.

With a lap of one division plus or minus, the design rows which must be cut into the design divisions of the pressers follow in regular order around the presser, the direction depending upon whether the presser is plus or minus. When a lap of two or three divisions is used, the design courses are in irregular order around the presser; and the confusion which knitters early experienced in locating the proper division for the required course resulted in the adoption, by common consent, of the rule of a lap of one division plus or minus.

There may occur instances where it is considered advisable to use a lap of two or three divisions, but I have never found it so.

Plus or Minus Can't Change

The letter suggests multiplying the number of revolutions of the cylinder by the number of needles and dividing the result by the number of cuts in the presser. By this method the writer proves that a presser may have a minus lap in one of its revolutions and a plus lap in another, while the original division of the number of needles by the number of cuts may show a plus or minus lap of two or three divisions. This is not very clear. To me a presser is plus or minus as a result of the original division, and it remains so for its life of use.

These calculations, apparently, were for the purpose of proving that a 5-division presser would work on 33 or 42 design columns because 5 is not a factor of 33 or 42. If the number of design columns were a multiple of 5, then each division of 5-division pressers would work always in the same design columns, and the design would not develop in the fabric. The result would be the same as in the case of an even division of needles by presser cuts.

In explanation of the algebraic equation of y and x, I note in the letter a statement that x represents cylinder revolutions and that y represents presser revolutions; and in the article which the letter explains I note equations $5y=24x-1$, $5y=33x-1$, and $5y=42x-1$. This looks very much like a case of the tail wagging the dog, if 5 presser revolutions result in 24, 33, and 42 cylinder revolutions respectively. And whence the "—1" in the equation?

Perhaps the writer of the article and the letter can give us an interesting discussion on the possibilities involved in designs in backing or plush effects by means of backing wheels—such as diagonals in alternate shades or materials, herringbones and diamonds in alternate effects, and other figures.

J. Frederick Cahill

Staple Cotton Fabrics

By John Hoye
Fabric Technician,
Iselin-Jefferson Co., New York

IN THIS ISSUE Mr. Hoye continues the discussion of sateens, the third of the foundation weaves, by presenting details on warp sateens. This is the fifteenth installment of the series on staple cotton fabrics which was started in the January, 1936, issue.

WARP SATEENS

FIVE-HARNESS, WARP-FACED SATEENS are stronger and heavier cloths than filling sateens and are used where service and durability are more essential than a high luster. The exceptions are the combed-yarn cloths, which are lighter and have a very lustrous finish after mercerizing and schreinering. They are the softest and silkiest of all cotton fabrics. A few of the combed-yarn, high-count, warp sateens are imported. Most of the cloth produced here is made with carded yarns. There are always many more ends than picks per inch. Because of this construction the fabrics are very strong in the direction of the warp, which bears most of the wear when in use. In weaving, each warp end is interlaced with one pick and then floats over four picks to each repeat of the weave. Five harnesses are used, and the movement is known as four up and one down. If the repeat of the weave is made to run to the left, a slight twill effect will be produced. English warp sateens (carded) are usually called *satin drills.*

The lighter and finer warp sateens, in addition to being made plain, are also made with shadow-stripe effects. Warp yarns of regular and reverse twist are arranged alternately in sections of sixteen, eighteen, or more ends. The different light-reflecting qualities of the two twists produce alternating stripes of light and shadow. Varying sections of warp ends are also used to give a striped-pattern effect.

Finishes used:

Carded fabrics: bleached and firm starched; plain starched; mercerized; sulphur dyed and napped on the back; printed with designs suitable for ticking, mattress covers, sleeve linings, and draperies.

Combed fabrics: mercerized and schreinered (often called Charmeuse finish); usually dyed and printed with designs suitable for dress goods and pajamas.

Uses in finished state:

Carded fabrics: Uniforms, sheepskin-lined coats, corset linings, brassieres, shoe uppers, linings, tickings, mattresses, pillows, cushions, and draperies.

Combed fabrics: Pajamas, dresses, blanket binding, ribbons, slips, underwear, linings, dressing gowns, bloomers, comfortables, etc.

Uses in gray (carded): Base for imitation leathers, imitation snake skins, rubberized fabrics, etc.

Widths: 27, 30, 30½, 32, 34, 36, 37, 39, 43, up to 58 in. Combed, 38, 38½, 39, and 43 in.—also up to 56 in.

Constructions: Carded, 88x30 up to 144 x104; Combed, 112x76 to 188x88.

Warp yarns: 14s to 28s carded, 50s to 80s combed.

Filling yarns: 22s to 42s carded, 70s to 100s combed.

Examples of warp sateens:

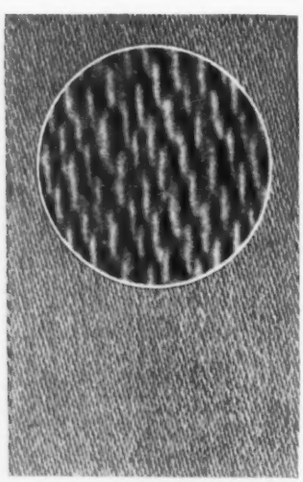
CARDED

32″	88x64	1.50	30½″	112x64	2.25
43″	96x64	3.75	34″	112x64	2.10
30½″	96x52	2.25	38″	112x64	3.25
42½″	96x56	4.00	37″	112x64	2.50
53″	96x60	1.12	37½″	108x50	2.06
54″	96x60	1.55	34″	112x72	2.00
54″	96x64	1.30	30½″	118x64	2.25
29½″	144x84	3.10	34″	118x72	2.00
42½″	108x52	1.30	29½″	140x88	3.41
58″	96x54	1.20	43″	140x96	3.35
34″	108x56	3.00	43″	104x48	2.00
34″	104x56	3.00	38″	192x92	2.40
30½″	112x64	4.00			

COMBED

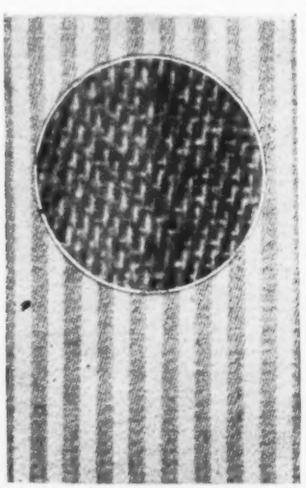
38″	160x88	5.50*	38″	188x88	5.70
38″	140x90	6.00*	38″	134x80	5.70
38″	144x88	5.60*	37″	168x88	5.75
43″	160x96	3.35*	37″	168x88	5.84

* Made plain (all regular twist) and also with regular and reverse twist.

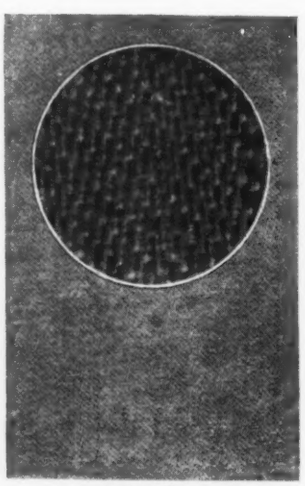


Iselin-Jefferson Co.

Warp Sateen (Carded), 34″, 104x56, 3.00 yd.



Gray



Finished

Shadow-Stripe Warp Sateen, Combed, Regular and Reverse Twist Warp, 39″, 160x88, 5.50 yd.

SOUTHERN SHOW

Of 1937 will be set to tune of "Happy Days Are Here Again"

Introduction by Douglas G. Woolf

EVEN though political considerations may restrain the Textile Hall Corp. from making "Happy Days Are Here Again" the official theme song for the Southern Textile Exposition at Greenville, S. C., Apr. 5 to 10, we are confident that that song will be in the hearts of those who attend, if not on their lips. As preparation for this story, we have been going over issues of this publication dealing with the Greenville shows of past years, and we found none whose psychological setting warranted the enthusiasm that should be present this year.

True, in the account of the 1917 show we read that absence of cotton yarn dealers was explained by the fact that this trade had "comparatively little to offer"; that there would have been more exhibits if the machinery manufacturers had not been "abnormally over-sold"; and that textile manufacturers were able to sell their products "far ahead at advantageous prices." But those were war times—unhealthy emergency. Certainly they did not warrant the enthusiasm or hopefulness that the present spectacular recovery from the depths of depression supplies as the back-drop for the 1937 show.

That 1917 exposition was the second in this chain of Greenville shows, of which the current is the twelfth. The first was held in November, 1915. In calling it the first, incidentally, we are referring specifically to this particular line of shows and are not overlooking the first Cotton Exposition held in Atlanta in 1881. (See TEXTILE WORLD, October, 1932, page 55.)

We find that there were forebodings in advance of the 1915 experiment. In *Textile World Journal*, predecessor of TEXTILE WORLD, we read that it had been feared "the expense and trouble of shipping machinery from all parts of New England and the West to Greenville would preclude many from making a display of their merchandise at this southern point." And that was as recently as 1915! Twenty years later, these same machinery men were to be practically commuting back and forth to this remote section!

But apparently the fears were unfounded, because we learn from the same unimpeachable source that it was "difficult to portray the enthusiasm of those connected with the Southern Textile Association in connection with the development of the exhibit." And the editor of our predecessor concluded: "The location of the exhibit in the center of a mill district, which is one of the most important in the South, was a happy one, while the distracting influence of other attractions being absent meant concentration upon the features of the exhibit that would have been difficult to find in almost any other part of the country. It was a most creditable, interesting and instructive display and gathering." . . . So apparently everybody lived happily ever afterward.

As noted above, the exposition at its start was a part of the activities of the Southern Textile Association. The secretary of the latter, A. B. Carter, managed the former. By the time of the second show in 1917, the Southern Textile Exposition, Inc., had been organized separately, with B. E. Geer, then president of Judson Mills, as president. However, many of the officers of the exposition company were also officers of the association, and consequently a very close tie existed between the two. Mr. Carter again had a dual personality: secretary of the association and director of the exposition.

The 1915 show was held in the warehouse of the Piedmont and Northern Railroad in Greenville. By the time of the 1917 event, however, a new building had been erected to house it. And apparently wartime scarcity of labor and supplies made its completion some job! The editor of our predecessor used nearly two pages of space to enthuse over the remarkable accomplishment of the management which, after postponing the show for a month, finally managed to open only two hours later than the scheduled hour. To add to the joy of nations, a snowstorm raised havoc with the plans of individuals. The aforementioned editor announced that 2500 words of a press wire were "lost" between Greenville and New York, and their publication prevented until the following week.

Despite all these handicaps, however, the show must have been good because the editor stated: "The biennial display in Greenville, located permanently as it is in a building erected by members of the industry itself, is of great educational value to practical mill men who are directly responsible for the efficient running of machinery."

In 1920 the Textile Hall Corp. was formed to manage the exposition building. W. G. Sirrine, president of that corporation, became the active head—and continues today in that capacity, with the help of the able secretary of the corporation, Miss Bertha Green. For several years Earle Mauldin, now a southern editor of TEXTILE WORLD, was manager of the exposition, under Mr. Sirrine's direction.

Although the show was thus removed from the offical scope of the Southern Textile Association, the unofficial connection between the two has continued close; the latter still meets at Greenville in exposition week.

So much for the background of the Southern Textile Exposition. Like so many phases of the South's spectacular textile growth, it has developed, within a comparatively few years, into a great enterprise. To its continued progress, this special section of TEXTILE WORLD is dedicated.

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First Greenville show held in freight warehouse 22 years ago.

TEXTILE WORLD'S Guide to

SOUTHERN TEXTILE SHOW

DETAILED descriptions of the booths at the Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, are given on this and following pages. In the report of each individual exhibit which has been announced to date are a list of the products which the exhibitor has chosen to display, booth numbers, and representatives.

TEXTILE WORLD will maintain headquarters in booth 214 at the Southern Textile Exposition, Greenville, S. C., April 5 to 10. Cordial invitation is extended to visitors to make this booth their business headquarters while in Greenville. Representatives of TEXTILE WORLD'S editorial and business staffs will be in attendance. Visitors' mail, sent to our Greenville office, 312 Woodside Building, or to our booth, may be picked up at the booth.

Abbott Machine Co., Wilton, N. H. Booths 212-213. Featuring 80-spindle full automatic winder in operation. Rep.: L. S. Ligon, W. R. Godfrey.

Adolff Bobbin Co., Kearny, N. J. Booth 480. Complete line of bobbins, fibre and wood, spools, quills, paper tubes, etc.; featuring Red Adolff dye tubes and newly developed large package bobbins and tubes. Rep.: W. E. Mayer, John Klinck, J. Alfred Lechler.

A. E. Mfg. Co., Decatur, Ill. Booth 416. Products from corn: textile starches, corn syrup, and corn sugar. Rep.: I. F. Wieland, Wm. H. Randolph, Jr., Allen Fuller, Geo. A. Dean, John A. Harris, R. R. Berry, Jr., W. T. O'Steen, and H. A. Mitchell.

Aldrich Machine Works, Greenwood, S. C. Booth 250. Showing Aldrich Synchronizer and other textile machine applications; also Gyrator cleaning, blending, and distributing machine made by Lummus Cotton Gin Co.; also RIHCO humidifiers made by R. I. Humidifier & Ventilating Co. Rep.: A. P. Aldrich, Jr., Robert Aldrich, Nelson Henry, G. Austin D'Arcy, I. W. Dixon.

Louis Allis Co., Milwaukee, Wis. Booth 108. Featuring new textile motors. Rep.: L. F. Keely, George Gardner.

Allis-Chalmers Mfg. Co., Milwaukee, Wis. Booth 131. Featuring new "Quick-Clean" squirrel-cage induction motor for driving textile machinery where lint is present; Texrope V-belt drive and application of "Vari-Pitch" V-belt sheaves of motion control type. Also rotary air compressors, vacuum pumps, centrifugal pumps. Rep.: Berrien Moore, William Parker.

American Blower Corp., Detroit, Mich. Booth 119. Showing Ventura exhaust fan, Type "V" fan, American H. S. Fan, Venturafin unit heater, Sirocco utility blower, and Sirocco unit heater. Rep.: J. P. Kidd, C. M. Reeves.

American Brass Co., Waterbury, Conn. Booths 450-452. Featuring cold-drawn seamless copper dry cans; three types of copper printing rollers; also special display of Anaconda "Electro-Sheet" copper for construction purposes. Rep.: H. F. Bramen.

American Cyanamid & Chemical Corp., New York, N. Y. Booths 458-459. Complete line of textile specialties, oils, sizes, penetrants, wetting agents, chemicals. Rep.: P. F. Haddock, Charles H. Stone, Hugh Puckett, C. B. Suttle, Jr., E. H. Driver, H. W. Rose, M. J. Wixson.

American Enka Corp., Enka, N. C. Booths 402-404. Rayon yarn in skeins and cones. Rep.: R. J. Mebane, R. R. Faison, and C. R. Hall.

American Lumber & Treating Co., Chicago, Ill. Booth 437. "Wolmanized" lumber, decay and termite-proof wood, and preservative chemicals.

American MonoRail Co., Cleveland, Ohio. Booth 112. Automatic overhead cleaning equipment and overhead MonoRail conveying equipment. Rep.: J. P. Lawrence, Curran S. Easley, H. W. Howarth.

American Mutual Liability Insurance Co., Boston. Booth 357. Safety education display features use of "black" light. Rep.: Henry A. Brown, T. R. Self, A. P. McIntosh, W. I. Blanton, Corson Rose.

American Pulley Co., Philadelphia. Booth 203A. Featuring "American" tension-control motor base and general line of steel split-belt pulleys, pressed-steel hangers, short center driver, pressed-steel hand trucks, pressed-metal stampings, etc. Rep.: Frank E. Brown, John F. Muller, John Halpin.

American Silk & Rayon Journal, New York. Booths 304-305. Publishers.

American Wool & Cotton Reporter, Boston. Booth 208. Publishers.

Armstrong Cork Products Co., Lancaster, Pa. Booth 131. Extra cushion seamless cork cots, helically wrapped cork cots; new products include cots made from synthetic rubber-like materials and from combinations of cork and synthetic rubber-like materials. Rep.: W. B. Tucker, T. L. Hill, J. V. Ashley, W. T. Coker, Jr., F. G. Richards, Jr., D. F. Sweeney, H. H. Jordan, D. T. Starkey, Guy C. Baer, D. P. Paiste.

Armstrong Machine Works, Three Rivers, Mich. Booth 414. Steam traps, including a glass model, in operation. Rep.: O. E. Ulrich, T. H. Rea, Allan T. Shepherd.

Arnold, Hoffman & Co., Providence, R. I. Booths 329-330. Textile sizes and other chemicals. Rep.: Edward M. Johnson, Frank W. Johnson, Robert E. Buck, Jr., Harold T. Buck, W. Chester Cobb, Arthur L. Snow.

Ashworth Bros., Inc., Fall River, Mass. Booth 119. Featuring card clothing and napper clothing. Showing card-setting machines in operation. Rep.: E. H. Isenhour, C. B. Thomason, E. A. Johnston, R. B. Wilson, R. C. Ashworth, Jr.

Atlanta Brush Co., Atlanta, Ga. Booths 409-410. Textile brushes for all purposes. Rep.: T. C. Perkins, William C. Perkins, George B. Snow.

Atwood Machine Co., Stonington, Conn. Booths 217-219. Complete working exhibit silk and rayon throwing machinery units, including new high-speed twister, new "5B" doubler-twister, and improved Stonington winder. Rep.: F. Sails, A. L. Lewis, W. R. Gordon, H. J. Morton, T. Dewhurst, J. R. Breen, R. F. Lenihan, L. H. Cornell, F. R. Hoadley.

Bahan Textile Machinery Co., Greenville, S. C. Booths 127-128. Attachments and parts for automatic looms. Rep.: W. H. Bahan, Edw. F. Bahan, Paul Bahan, J. C. Williamson, N. M. Neal, W. R. Rothrock, E. T. Lollis, W. H. Maudling.

Bahnson Co., Winston-Salem, N. C. Booths 216-218. Line of humidifying equipment. Rep.: S. C. Stimson, D. P. Stimson, I. L. Brown, A. H. Bahnson, F. F. Bahnson, A. Page.

Barber-Colman Co., Rockford, Ill. Booths 247-249. Automatic spooler and super-speed warper operating, respectively, at 1,200 and 900 yd. per min.; warp-tying machines, and complete line of electrically-operated controls and air distribution outlets for all types of heating, ventilating, and air-conditioning systems. Rep.: J. H. Spencer, N. H. Alford, S. R. McElroy, W. B. Anderson, J. E. Moore, W. P. Turner, B. A. Peterson, R. E. McCausland, R. G. Ross, F. D. Taylor, V. M. Lathers.

Beaver Pipe Tools, Inc., Warren, Ohio. Booth 333. Modernized line of new and improved Beaver pipe tools and machines. Rep.: H. B. Carlock.

Benjamin Electric Mfg. Co., Des Plaines, Ill. Booth 113. Featuring new Equalite reflector for uniform lighting of looms, new mercury vapor unit, and new combination mercury-Mazda lighting unit. Rep.: J. S. Dunlop, J. M. Asher, I. H. Stockel, R. W. Staud.

Charles Bond Co., Philadelphia. Booth 448. Full line of textile leathers, featuring Red Head loop picker and new Bondaron leather bumper. Rep.: C. Carter Bond.

Bristol Co., Waterbury, Conn. Booth 108½B. Featuring Coordinated Process Control for automatic process control. Also exhibiting range of instruments to control and record individual operations in the mill, including new electric integrating flow meter; also mill supply line, including socket set screws, socket head cap screws, belt lacing, and belt plates. Rep.: H. L. Griggs, L. G. Bean, H. E. Beane, E. R. Wyatt, H. A. Van Hala, C. Webber, F. W. Borchers, J. L. Williams, G. R. Atkins, C. R. De Arman.

Brown Instrument Co., Philadelphia. Booths 418-420. Centralized control board will feature eleven indicating, recording, and controlling instruments, including new moisture-recording controller; also hair-element air-control humidity recorder, portable humidity and room temperature recorder, flow meter, CO_2 and stack-temperature recorder, diaphragm and motorized valves, thermostats, etc. Rep.: L. Morton Morley, Ralph L. Goetzenberger, Wesley R. Moore, Richard P. Hawkins, William D. Douglas.

H. W. Butterworth & Sons Co., Philadelphia. Booths 58-60. Featuring stainless steel drying cylinder, satin finish; stainless steel drying cylinder, polished; and newly developed Butterworth electric guider-solenoid type on floor stands. Rep.: J. Hill Zahn, H. W. Butterworth, Jr., J. Ebert Butterworth, William S. Rowley.

Charlotte Mfg. Co., Charlotte, N. C. Booth 421. Card clothing and reeds; also card clothing machine. Rep.: H. C. Mungo.

Chicago Belting Co., Chicago, Ill. Booths 209-210. Featuring educational exhibit on belt drives and running exhibit on application of hydraulic packings and company's complete line of textile leathers. Rep.: James E. Taylor, A. J. Weis, Wayne Davies.

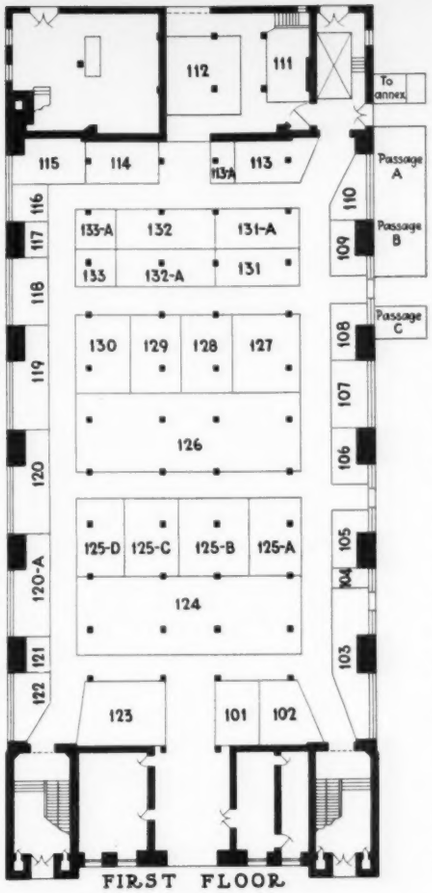
Clinton Co., Clinton, Iowa. Booths 205-206. Starch products.

Clipper Belt Lacer Co., Grand Rapids, Mich. Booth 221. Lacers, hooks, and cutters for lacing and cutting power belts. Showing new equipment for lacing spindle tapes and condenser tapes. Rep.: Perry J. Edwards, Fred V. Hallam.

Cloroben Corp., Jersey City, N. J. Booth 306. Featuring new sanitation chemical and its uses in mills and in mill village, town and city sewage disposal. Rep.: Harold P. Goller.

Coffing Hoist Co., Danville, Ill. Booth 334. Electric and ratchet hoists; spur-gear gravity, and ratchet gravity lowering hoists. Rep.: J. A. Brewer.

Commercial Investment Trust, Inc., New York. Booths 340-341. Photographs showing machinery and equipment installations financed by this company. Rep.: S. D. Maddock, M. E. Gillis, R. S. Murphy, J. L. Wells, J. A. Weingart.



Continental-Diamond Fibre Co., Newark, Del. Booth 106. Line of roving cans, boxes, and trucks; also Celoron silent gears and Dilecto non-corrosive insulation. Rep.: N. N. Wright, C. L. Simmons, C. M. Sheward.

Corn Products Sales Co., Greenville, S. C. Booth 457. Starch products. Rep.: J. C. Alexander, C. G. Stover, W. R. Joyner, L. H. Kelley, J. Alden Simpson, A. N. McFarlane and T. A. Mott.

Cotton, Atlanta, Ga. Booth 408. Textile publishers.

Dana S. Courtney Co., Chicopee, Mass. Featuring automatic-loom warp-spinning bobbins and twister bobbins in exhibit of McLeod Cos. Rep.: J. F. MacDonald.

Crane Co., Chicago, Ill. Booths 462-463. Brass, iron, and steel valves; fittings, and steam specialties used in textile power and processing plants. Rep.: W. F. Lahl, P. F. Sackett, Ward Converse.

Crompton & Knowles Loom Works, Worcester, Mass. Booth 126. Display includes six new looms: C4, convertible loom, 68-in., 25-harness dobby, 4x1 box bobbin changer or 4x4 box non-automatic; C4 bedspread loom, 98-in., 20 harness, 15/32-in. gage dobby, 4x1 box bobbin changer; C5 cotton suiting loom, 46-in., 20 harness dobby, 4x1 box bobbin changer; C3, terry towel loom, 40-in., 16 harness dobby, 4x1 box bobbin changer; C3 huck towel loom, 33-in., 16 harness dobby, 2x1 box bobbin changer; S3, under cam loom, 52-in., 6 harness, 2x1 box shuttle changer.

Crouse Hinds Co., Syracuse, N. Y. Booth 471. Flood lights, plugs, and receptacles; switch boxes; junction boxes; condulets; lighting units. Rep.: C. A. Hausman, J. J. Jerry, L. P. Spoon, F. C. Smith.

Curtin-Howe Corp., Chattanooga, Tenn. Booth 120. Lumber treated with ZMA (zinc meta arsenite).

Curtis & Marble Machine Co., Worcester, Mass. Booths 238-239. Type CMR shearing machine with built-in Diehl motors for cutters, automatic protector for seams, and Type A rolling head; No. 23 railway sewing machine with high-speed Singer sewing head for rapid sewing of seams; also cloth folding machine with deep drop to table. Rep.: W. F. Woodward, R. L. Marble, F. C. Bryant, Frank MacKay.

Cutler Hammer, Inc., Milwaukee, Wis. Booths 346-347. Model operating range drive and complete display modernized control equipment and safety switches for textile industry. Rep.: L. P. Niessen, E. G. Peterson, B. M. Horter, A. C. Gibson, W. E. Addicks, P. S. Jones.

Daily News Record, New York, N. Y. Booth 341. Textile publishers.

Danielson Mfg. Co., Danielson, Conn. Booth 110½B. Rawhide pickers and loom parts. Rep.: C. A. Burdick, J. H. Chadbourne, F. E. Antley.

Diehl Mfg. Co., Elizabethport, N. J. Booth 233. Electrical equipment. Rep.: P. N. Thorpe, H. B. Thorpe, F. B. Williams, Jr., R. D. Ingalls, S. C. Boyd.

Draper Corp., Hopedale, Mass. Booth 124. Featuring XK Model high-speed loom for plain and fancy rayon fabrics woven with one shuttle, developed after two years' research. Showing also 40-in. X Model running at 210 picks per minute, and as a contrast E Model running at 160 picks per minute; two 44-in. XK Model with latest improvements weaving rayon; 90-in. XL Model weaving broad sheetings running at 120 picks. Also new shuttles, spindles, rings, bobbins, temples, and spooler guides. Rep. E. N. Darrin, Clare H. Draper, Jr., W. M. Mitchell.

E. I. duPont de Nemours & Co., Rayon Division, New York. Booth 445. Fabrics made of DuPont rayon. Rep.: F. H. Coker, O. F. Long, H. C. Kennette, T. C. Welling.

Eclipse Textile Devices, Inc., Elmira, N. Y. Booth 102. Yarn cleaners, bobbin holders, slub catchers, random dyeing machines. Rep.: J. P. Garey, J. D. Lutes, F. W. Fowler, H. Greimsman.

Everlastic Textiles, Greenville, S. C. Booth 302. Roll coverings, temple rolls, spinning rolls, and take-up roll covers. Rep.: Roger W. Cutler.

Fafnir Bearing Co., New Britain, Conn. Booth 472. Ball bearings for all types of cotton, wool, silk, and rayon textile preparatory and finishing machinery. Rep.: C. F. Stanley, C. A. Berg, A. G. Loughridge, D. S. Berg, W. D. Davis.

Fairbanks, Morse & Co., Chicago. Booth 449. Show warehouse scale with printomatic weigher; also special dye

room scales, bench dial scales, portable platform scales, and postal scales. Rep.: O. O. Lewis, George R. Bollinger, William J. Houston, John A. Cuneo.

Fibre Specialty Mfg. Co., Kennett Square, Pa. Booth 478. Hard vulcanized fibre mill equipment, including seamless roving cans, mill boxes, doff trucks, special textile Dreadnaught trucks, and self-lubricating threadproof textile casters. Rep.: R. G. Henderson, G. B. Scarlett, Ralph Woods, Harry Chandler, R. A. Craig, B. C. Plowden.

Finnell System, Inc., Elkhart, Ind. Booth 110. Featuring new combination mill floor electric scrubber-vacuum dryer, available in three sizes; showing also floor scrubber-polisher, floor cleaning agencies, and mill floor treatments. Rep.: W. S. Finnell, J. W. Farris, Reuben Finnell, L. E. Arnold.

Fisher Governor Co., Marshalltown, Iowa. Booth 215. Pressure-reducing valves, pilot-operated pressure regulators, back-pressure regulators, float valves, liquid-level controllers, strainers, steam traps, pump governors. Rep.: P. A. Elfers, L. E. Eige, J. McCabe.

Foster Machine Co., Westfield, Mass. Booths 229-231. Machines for cone winding knitting yarn and commercial and dyeing package tubes, including latest design attachments and accessories. Featuring new methods for clearing, paraffining, and conditioning yarn in winding operation. Rep.: D. W. Bridgman, R. W. Ensign, Fred P. Brooks, T. E. Connor, Fred F. Strange.

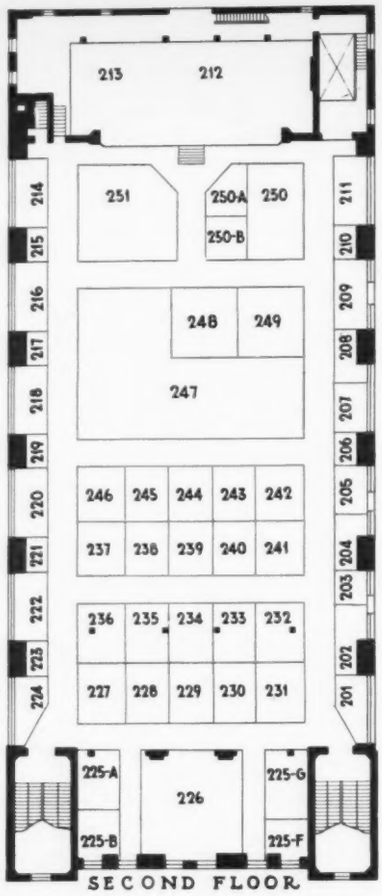
Foxboro Co., Foxboro, Mass. Booths 430-432. Complete slasher-control instrument panel; elapsed-time temperature recorder-controller for size cooking kettle temperature; Type 1119 non-recording temperature controllers for size-box level and temperature; also general line of thermometers, controllers, indicators, gages. Rep.: C. E. Sullivan, A. W. Chase, W. W. Barron, E. G. Cullings, R. W. Allen.

Gates Rubber Co., Denver Colo. Booths 337-338. Vulco rope drives and evener and cone belts. Rep.: Fred Siegrist, H. W. Dickerson, D. J. Broadhurst, N. V. Nutting, H. A. Page, V. G. Brookshire.

General Electric Co., Schenectady, N. Y. Booths 116-118. Featuring new screenless open textile motor; loom motors and loom-motor control, and demonstration of newly developed mercury limit switch for spinning-frame control. Rep.: E. H. Ginn, W. W. Cronkhite, P. A. Johnson, A. P. Mansfield, R. B. Hanna, E. A. Hancock, W. J. Dorworth, J. H. Joyce, G. W. Darby, E. P. Coles, R. B. Horning, E. D. McKellar, R. H. Jackson, J. H. Persons.

General Electric Co., Incandescent Lamp Dept., Atlanta, Ga. Booth 115. Lighting equipment.

General Electric Vapor Lamp Co., Hoboken, N. J. Booth 115. Industrial lighting units. Rep.: C. F. Strebig, D. R. Grandy, F. E. Keener, C. N. Knapp, T. Collins, J. H. Bowers, L. F. Gerisch.



Gerrard Co., Chicago. Booth 244. Wire tying machines for bales, wooden boxes, corrugated and fiber cartons. Rep.: Adolf Larsen, W. B. Renois, R. J. McClintock, E. J. Roberts.

L. H. Gilmer Co., Tacony, Philadelphia. Flat belting, V-belts, cone belts, fabric belts. Rep.: W. W. Conard, A. B. MacFarland.

Goodyear Tire & Rubber Co., Akron, Ohio. Booth 323. Rubber belting.

Graton & Knight Co., Worcester, Mass. Booth 415. Research belting and leather specialties for textile industry. Featuring working demonstration on how research leather belting increases machine speed. Rep.: C. O. Drayton, G. A. Barnard, J. E. MacMahon, P. M. Carter, O. D. Landis, D. A. Ahlstrand.

Greenville Textile Supply Co., Greenville, S. C. Booths 423-426. Booth will be occupied by: McLeod Leather & Belting Co., Greenville Textile Supply Co., and Odell Mill Supply Co., representing: Bowen-Hunter Bobbin Co., Dana S. Courtney Co., Vermont Spool & Bobbin Co., Walker Mfg. Co., L. H. Gilmer Co., Frank E. Paige & Co., and Wm. R. Noone & Co. Rep.: D. R. Dickson, W. T. McLeod, John Walker, Jr., Harry G. Hunter, J. F. MacDonald, A. A. Tiffany, R. E. S. Geare, A. B. MacFarland.

Gulf Oil Corp., Atlanta, Ga. Booth 211. Industrial oils and greases. Rep.: L. T. Daughtridge, A. W. Ripley, Jr.

H & B American Machine Co., Pawtucket, R. I. Booths 129-130. Model C long-draft spinning frame, new-type five-roll super-draft speeder, new multiple-draft one-process speeder, rubber-covering machine, and Belger roving tester. Rep.: J. Walter Rimmer, J. Carlile Martin, Fred Dickinson, Fritz Zweifel, C. M. Powell, George W. Murphy, Wm. B. Martin, Wm. M. Fraser, E. J. McVey.

Hercules Powder Co., Wilmington, Del. Booths 331-332. Textile chemicals produced by parent company and Naval Stores Department, Providence Drysalters Division, and Paper Makers Chemical Division. Rep.: A. Langmeier, P. Mayfield, B. H. Little, F. V. Rapp, W. W. Stapler, C. H. Boys, W. T. Bunce, F. C. N. Jackson, F. S. McMullen, H. M. Thompson.

E. F. Houghton, & Co., Philadelphia. Booth 132. Featuring size check-up test; also new Raylubric pebble-control process, guaranteeing uniform crepeage by use of one-piece product made in three varieties; rayon sizing products and demonstration of Vim Tred leather belt and other textile leathers, and Sta-Put lubricants for textile machinery. Rep.: G. S. Rogers, W. H. Brinkley, D. C. Miner, H. C. Roberts, C. B. Kinney, J. J. Reilly, J. A. Brittain, D. O. Wylie, B. E. Dodd, J. W. Byrnes.

Howard Bros. Mfg. Co., Worcester, Mass. Booths 242-243. Complete line of card clothing, hand cards, heddles, and related products. Rep.: Harry C. Coley, Neal A. Mitchell, G. L. Melchor, A. A. Moffitt, Fritz Nuckols.

Huntington & Guerry, Inc., Greenville, S. C. Booth 202. Featuring trouble-proof electrical wiring; installations for textile mills. Rep.: R. S. Huntington, DuPont Guerry, Jr., J. H. Howard, J. A. Keller.

Hyatt Bearings Division, General Motors Corp., Harrison, N. J. Booth 120. Anti-friction bearings for looms, preparatory and finishing machinery, including newer applications in this equipment. Rep.: H. K. Porter, W. L. Iliff, H. M. Carroll, F. U. Naughton, E. P. O'Neill, J. M. Grady.

Hygrolit Inc., Kearny, N. J. Booth 480. Yarn conditioning machinery for filling yarn and latest model of cone and package conditioning machine. Rep.: C. F. Dulken, H. E. Kresse, Belton C. Plowden, John Klinck, J. Alfred Lechler.

International Nickel Co., New York. Booths 443-444. Featuring mill and fabricated forms of Monel metal and Nickel-clad steel textile-plant equipment, including dry can, perforated dye beam, tubes and spindles for package dyeing, dye sticks, dye tanks, size kettles, and other dyehouse and finishing plant equipment constructed of corrosion resistant materials. Rep.: E. A. Turner, C. J. Bianowicz, J. F. Nation.

International Salt Co., Scranton, Pa. Booth 481. Lixate salt dissolver. Rep.: R. V. Irwin, R. H. Leavelle, S. J. Martin, George C. Jones.

Iron Fireman Mfg. Co., Cleveland, Ohio. Booths 227-8. Commercial-industrial stokers, pneumatic spreader stokers, and residential stokers. Rep.: C. D. Carter, Jack Fanning, J. W. Baxter, H. G. Krayenhof.

E. H. Jacobs Mfg. Co., Danielson, Conn. Booth 422. Loom accessories. Also products of company's two subsidiaries, E. H. Jacobs Mfg. Corp., Johnson City, Tenn., and Williamsville Buff Mfg. Co., Danielson, Conn. Rep.: W. Irving Bullard, Edward Jacobs Bullard, B. T. Clark, S. B. Henderson, C. W. Fletcher, Herbert Fletcher, Wesley Dynes.

Jenkins Bros., New York, N. Y. Booths 441-442. Bronze, iron, and steel valves; mechanical rubber goods; gage glasses. Rep.: Edwin L. Dean, Henry Foster, H. L. Barnsley.

Johns-Manville, New York, N. Y. Booth 222. Insulating, friction, packing, and building materials. Rep.: R. S. Hammond, A. S. Royal.

Johnson Bronze Co., New Castle, Pa. Booth 250. Bronze bearings. Rep.: I. M. Valentine, Eugene Scanlon.

Johnson Corp., Three Rivers, Mich. Booth 413. Rotary pressure joint, a packless stuffing box for dry cans, calenders, slashers, sizers, etc. Also condensate and boiler feed unit. Rep.: R. O. Monroe, Allan T. Shepherd, Lloyd Taylor, John Dodd.

Keever Starch Co., Columbus, Ohio. Booth 407. Textile starches. Rep.: C. J. Kurtz, D. H. Wallace, Claude B. Iler, L. J. Castile, F. M. Wallace.

Kisco Boiler & Engineering Co., St. Louis. Booth 111.

A. C. Lawrence Leather Co., Peabody, Mass. Booths 405-406. Roller leather. Rep.: H. H. Hersey, K. S. Kirk.

F. A. Lazenby & Co., Baltimore, Md. Booth 436. Filling winders. Rep.: Jos. D. Lazenby, F. Marion Lazenby, O. R. Payne, and Robert F. Mormann.

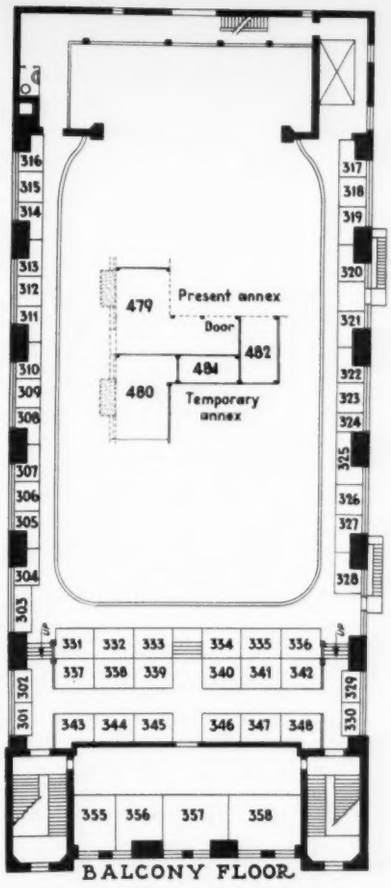
Lestershire Spool & Mfg. Co., Johnson City, N. Y. Booth 225. Fibrehead spools, silk and rayon twisting machine equipment, wire guides and cleaners. Rep.: L. E. Wooten, E. G. Crooks, H. D. Clinton.

Leyland Walsh Co., Readville, Mass. Booth 466. Textile finishing machinery. Lappings and blankets. Also general line of Thomas Leyland Machinery Co., including patented aluminum or iron suction bobbins for rubber-covered expanders. Rep.: Frederick T. Walsh, Sidney A. Mathews.

Link-Belt Co., Chicago. Booth 220. Silent and roller-chain drives; variable-speed gears; motorized speed reducer. Rep.: G. H. Burkholder, H. D. Mitchell, W. J. Nighbert, J. R. Martin, L. S. Taylor.

Lunkenheimer Co., Cincinnati, Ohio. Booth 104. Feature new "N-M-D" (non-metallic disk) valves, Alvor constant-level oil control, and Vosta loose-pulley oilers; also general line of valves, mountings, lubricators, and other engineering specialties. Rep.: Harry A. Burdorf, W. Kenneth Bishop, E. L. Hertenstein, E. Prentys Word.

Macbeth Daylighting Co., New York. Booth 307. Daylight lamps including Types AKP82, PP80, AKP80, ACP50, and ACP30. Rep. Norman Macbeth, F. F. Phillips.



Marchant Calculating Machine Co., Oakland, Calif. Booths 223-224. Featuring new "Silent Speed" calculators, all electric and fully automatic. Rep.: A. T. Davis, E. M. Avery, J. T. McArthur, R. J. Maclean, W. S. Webster.

Mathieson Alkali Works, New York. Booths 469-470. Chemicals for textile processing, including caustic soda, soda ash, liquid chlorine, aqua ammonia, bicarbonate of soda, calcium hypochlorite, etc. Rep.: Fred O. Tilson, R. C. Staples, J. W. Ivey, Z. N. Holler, E. M. Murray, G. E. Missbach.

McLeod Cos., Greensboro, N. C. Booths 423-426. Bobbins, lamps, belting, strapping, and miscellaneous mill supplies, including products of McLeod Leather and Belting Co. Rep.: W. T. McLeod, C. E. Bailes, Karl Fisher.

Merco Nordstrom Valve Co., Columbia, S. C. Booth 345. Lubricated valves, water meters. Rep.: F. G. Swaffield, M. H. Weston, R. S. Reed, Jr., W. F. McAulay.

Merrow Machine Co., Hartford, Conn. Booths 225-A and B. Featuring Styles 60ABB, 60D3B and 60ABBY machines for butted seaming; also new Class A machines for overseaming and overedging. Rep.: E. W. Hollister, R. B. Moreland.

Mexico Refractories Co., Mexico, Mo. Booth 334. High temperature cement, fire brick, castable refractory. Rep.: P. A. McIntyre, H. P. Sossoman, P. R. Garretson.

Miller Co., Meriden, Conn. Booth 133. Industrial and commercial lighting equipment including latest developments in combination high-intensity mercury-vapor and incandescent equipment. Rep.: G. G. Harney, J. J. Perry, Jr., William Cason.

Monroe Calculating Machine Co. Inc., Orange, N. J. Booth 225. Calculating, adding, and bookkeeping machines, also check writing equipment. Featuring new posting machine for payroll records which provides all data required for making reports under the Social Security Act. Rep.: J. C. Fleming, P. D. Williams, P. T. Barry, J. F. McLendon.

Morse Chain Co., Ithaca, N. Y. Booth 358. Featuring silent chains, drives, roller chains, flexible couplings, clutches. Rep.: W. W. Bertram, R. J. Koch, Harry E. Matthews.

Myles Salt Co., Ltd., New Orleans, La. Booth 325. Salt brine percolator in operation; Myles Louisiana rock salt. Rep.: William A. Levins, T. W. Greve, Seymour Schwartz.

National Ring Traveler Co., Providence, R. I. Booth 348. Spinning and twisting travelers, including Wentworth double-duty travelers, gravity, gravity express, Lowboy, duplex twister, and C.E.F. travelers, also American, Hicks & Wilson travelers. Rep.: C. D. Taylor, Otto V. Pratt, L. Everett Taylor, Harold B. Askew, Philip C. Wentworth.

New Departure Division, General Motors Corp., Bristol, Conn. Booth 464. Ball bearings and variable-speed Transitorq. Rep.: T. C. D. Crow, W. H. Harrington, Rodger Brouwer, C. B. Beckwith, J. P. Gillilan, E. M. Potter, John Collins.

New York & New Jersey Lubricant Co., New York, N. Y. Booth 109. Textile machine lubricants; featuring Non-Fluid oil. Rep.: Jos. H. Bennis, Lewis H. Thomason, F. L. Thomason, W. C. Taylor, J. A. Sorrells, F. D. Jacoway.

Wm. R. Noone & Co., Boston, Mass. Booths 423-426. Rep.: George H. Bridge, L. L. Watkins.

Norma-Hoffmann Bearings Corp., Stamford, Conn. Booths 453-454. Ball, roller, and thrust bearings, totaling 108 distinct series. Also ball- and roller-bearing pillow blocks and mountings; sealed grease packed and fully protected ball bearings, metal-sealed ball bearings, cartridge bearings. Rep.: W. M. Nones, O. P. Wilson, H. J. Ritter, G. R. Bott, D. E. Batesole, T. E. Rounds, R. V. Donnelly.

Norris Brothers, Greenville, S. C. Booth 225. Line of dogwood and persimmon shuttles; featuring patented improved cast-iron eyes for standard wind filling and Norris patented improved cast iron eyes for reverse wind fillings; also new eye for automatic shuttles. Rep.: B. R. Burnham, P. W. Matheson, J. W. Littlefield.

Oakite Products, Inc., New York, N. Y. Booth 309. Textile detergents; methods of economical cleaning of air-conditioning and humidifying systems; methods of cleaning steel heddles; finishing materials. Rep.: J. J. Basch, H. M. Steeb, C. Johnson.

Odell Mill Supply Co., Greensboro, N. C. Booth 423. Mill supplies. Rep.:

W. T. McLeod, C. E. Bailes, and K. A. Fisher.

Penick & Ford, Ltd., Cedar Rapids, Iowa. Booths 439-440. Starches, dextrins, gums, textile sugar, corn syrup, corn oil, and corn oil soap. Rep.: D. P. O'Connor, H. A. Horan, P. G. Wear, G. L. Morrison, C. T. Lassiter, T. H. Nelson, J. H. Almand, W. J. Kirby, E. C. Kontz, Jr.

Permutit Co., New York, N. Y. Booth 411. Featuring new portable Ranarex CO_2 indicator; also automatic water softener, coagulant, and chemical feeding devices. Rep.: H. H. Morrison, N. D. Doane, M. F. Corin.

Plibrico Jointless Firebrick Co., Chicago. Booth 438. Jointless firebrick, castable refractory, refractory cements, air-cooled wall, and suspended arch. Rep.: Oliver L. Ballard, Mark H. Allen, Frank S. Rieder.

Port Utilities Commission, Charleston, S. C. Booth 312. Rep.: H. Dew.

Powers Regulator Co., Chicago, Ill. Booth 435. Automatic recording and controlling instruments. Rep.: F. E. Klages, E. Foss, W. C. Heckeroth, J. Joyce, F. C. Jones, Jr.

Power Transmission Council, Inc., Boston, Mass. Booth 132-A. Featuring energy drive. Rep.: V. A. Hanson, A. P. Homer, Roy S. Smith.

Protective Life Insurance Co., Birmingham, Ala. Booth 318.

Rawls & Jennings, Greenville, S. C. Booth 108½A. Temprite industrial water coolers and drinking fountains. Rep.: John Wyllie, J. W. Jennings.

Rayon Textile Monthly, New York, N. Y. Booths 327-328. Publishers.

Reeves Pulley Co., Columbus, Ind. Booth 240-241. Feature miniature set of dry cans and mangle, one-fourth actual size, driven by three Reeves transmissions, synchronizing various sections and regulating speed of cloth in yards per minute and maintaining uniform tension on cloth; showing also variable-speed transmission, motor pulley, Motodrive. Rep.: C. L. Irwin, C. M. Reeves, D. M. McSpadden, Clark Erwin, A. Jepson, J. W. Vaughan, Jr.

Republic Steel Corp., Cleveland, Ohio. Booths 473-476. Featuring use of stainless steel in experimental bleaching kier by William Allen Sons Co.; expander arrangement, tenter frame clip, roller bearings by Van Vlaanderen Machine Co.; miniature dye-jig and two miniature dry cans by S. Blickman Co.; a 50-in. dye jig by Werner Machine Co.; humidifying unit by Industrial Dryer Corp.; also utensils, pails, dippers. Rep.: G. C. Snyder, G. W. Hinkle, R. J. Working, J. W. Minor, Gale R. Irvin, C. W. Ruth.

J. E. Rhoads & Sons, Philadelphia. Booths 245-246. Flat and round belting, preserver, textile straps. Rep.: J. Edgar Rhoads, R. H. Rhoads, C. R. Mitchell, J. W. Mitchell, L. H. Schwoebel, A. S. Jay, J. T. Hoffman, S. L. Allen.

Rhode Island Warp Stop Equipment Co., Pawtucket, R. I. Booth 125. Loom attachments, drop wires, etc.

Ridge Tool Co., Elyria, Ohio. Booth 110½A. Wrenches, cutters, pipe threaders, vises, cutting oil, and Ridgid extractors. Rep.: W. L. Parcell, J. J. McIntosh, C. H. Ingwer, Jr.

Wm. C. Robinson & Son Co., Baltimore, Md. Booth 105. Featuring "Slashol" for sizing; also full line of industrial oils and lubricants. Rep.: R. T. Purkins, B. D. Heath, Fred W. Smith, Ben F. Houston, R. B. Diggle, W. T. Moreland, Robert J. Maxwell, C. M. Greene.

B. S. Roy & Son Co., Worcester, Mass. Booth 207. Traverse grinder, roller grinder, clyinder-roll grinders for cotton cards. Rep.: John R. Roy, Herman C. Schwager.

Saco-Lowell Shops, Boston. Booth 226. Featuring following equipment in operation: spinning frame equipped with Saco-Lowell better-drafting system, long-draft roving frame, comber, and Kettley lap-measuring machine. Also general line of flyers, rings, rolls, etc.

Sarco Co. Inc., New York. Booth 429. Steam traps for all textile applications, including thermostatic traps and float thermostatic traps; also self-operated temperature regulators, new water blenders, and line of electric line voltage thermostats and hydraulic motor valves. Rep.: E. E. Wells, H. E. Gray, W. Gray, S. Roberts.

Sherwin-Williams Co., Cleveland, Ohio. Booth 401. Textile paints. Featuring demonstration of Save-Lite finishes, mill village paint, and velvet enamel. Rep.: John N. Limbach, M. P. Forte, R. B. Olney, E. H. Steger, G. L. Hehl, A. H. Kennedy.

Simplex Valve & Meter Co., Philadelphia. Booth 339. Venturi meter, filter rate controller, and filter gages. Rep.: Everett M. Jones, W. D. Taulman, T. C. Heyward, M. M. Borden.

Singer Sewing Machine Co., New York. Booth 232. Featuring equipment of interest to cotton mills, bleacheries, dye works, including piece and stitching equipment, both portable and stationary. Bleachery showings include 158K Type piece-end stitching machine. Rep.: H. C. Morehouse, J. C. Lewis, C. S. Womack, E. C. Cain, J. W. Daley, S. MacLerie.

J. E. Sirrine & Co., Greenville, S. C. Booth 219. Textile engineers.

S K F Industries, Inc., Philadelphia. Booths 467-468. Featuring loom equipped with S K F bearings; also showing complete line of ball and roller bearings, spindles, and tension pulleys. Rep.: R. H. DeMott, B. F. Davis, K. F. Thomas, H. A. Fonda, N. Miller, M. H. Courtenay, G. E. Allen, R. W. Franklin, H. P. Goodwin.

Smith, Drum & Co., Philadelphia. Booth 125B. Hosiery, skein, package, and piece-goods dyeing equipment. Rep.: Harry S. Drum, William C. Dodson, J. E. MacDougall, J. M. Ballentine.

Snap-on Tools, Inc., Kenosha, Wis. Booth 303. Hand tools for mill fixers and mechanics. Rep.: R. A. Martin, Kennard Martin, Odis Stevens.

Socony-Vacuum Oil Co., Inc., Baltimore, Md. Booth 355. Featuring "The Pageant of Industrial Progress," showing also line of Gargoyle lubricating oils and greases and processing oils. Rep.: C. G. Swank, F. H. Trewin, E. T. Gregorie, Bruce Cotton, B. C. Decker, G. W. Roberts, George B. Rogers.

Sonoco Products Co., Hartsville, S. C. Booth 103. Paper carriers, including cones, tubes, and spools; also cork cots and roll-covering equipment. Rep.: W. B. Broadbent, P. F. Williams, W. A. Biggs, E. S. Reid, H. F. Gaffney, W. M. Carpenter.

Southern Shuttles, Inc., Greenville, N. C. Booth 123. Automatic bobbin-changing shuttles, automatic shuttle-changing loom shuttles, and plain hand-threading and silk tension shuttles of spindle type; also all types of metal parts and hardware used in shuttles. Featuring latest automatic shuttle for cotton high-speed looms; also new silk shuttles for flat quills and new "first pick tension" shuttles for bobbin-changing looms. Rep.: Louis P. Batson, J. J. Kaufmann, Jr., H. E. Littlejohn, Davis L. Batson, Claude W. Cain, H. Raiford Gaffney, John P. Batson, Jess Long.

A. E. Staley Mfg. Co., Decatur, Ill. Booth 416. Textile starches and corn syrups. Rep.: I. F. Wieland, W. H. Randolph, Jr., George A. Dean, Allan Fuller, J. A. Harris, W. T. O'Steen, R. R. Berry, Jr., H. A. Mitchell.

Steel Heddle Mfg. Co., Philadelphia. Booth 123. Featuring loom in operation equipped with latest harness and accessories; also showing collection of latest fabrics together with various harnesses for the efficient weaving of same. Rep.: J. J. Kaufman, Sr., Robert J. Freitag, J. J. Kaufman, Jr.

Stein Hall & Co. Inc., New York, N. Y. Booth 482. Starches, dextrins, sago flours, tapioca flours. Rep.: Ira L. Griffin, F. G. LaPiana, J. W. Stallings, W. B. Strickland, T. C. Davis, W. N. Kline, C. R. Gill.

Stewart-Warner Corp., Chicago. Booth 125. Alemite lubrication systems and lubricants. Rep.: Otto A. L. Keser, A. J. Tilton.

Joseph Sykes Bros. (American) Inc., Charlotte, N. C. Booth 336. Card clothing used on cotton cards. Rep.: Walter B. Pratt, Harry Morrow, A. L. Whipple, Charlie Mason.

C. J. Tagliabue Mfg. Co., Brooklyn, N. Y. Booths 427-428. Instruments for indicating, recording, and controlling temperature, pressure, humidity, level, flow, etc.; also electrical potentiometer type instruments and automatic control equipment. Rep.: V. Wichum, W. C. Bennett, Carl Endlein.

W. O. & M. W. Talcott, Inc., Providence, R. I. Booth 412. Featuring safety belt fasteners and special fasteners for conveyor belting; also fasteners for leather, rawhide, rubber, woven, and all kinds and types of belting. Rep.: M. W. Talcott, G. W. Little.

Taylor Instrument Cos., Rochester, N. Y. Booths 446-447. Featuring recently developed "Fulscope" indicat-

ing and recording controllers, giving control with full-range sensitivity, also industrial thermometers with new Binoc tubing, giving greater magnification and easier reading. Rep.: Frank S. Ward, Howard M. Barker, E. J. Hanna, W. E. Gray.

Temprite Products Corp., Detroit, Mich. Booth 108½A. Complete instantaneous multiple system installation, serving 3 or 4 wall and pedestal type fountains available throughout building to public for drinking purposes; showing at booth models of their coolers. Rep.: John Wyllie, Jr., H. B. McLaughlin, J. G. Goodwin, J. W. Jennings.

Terrell Machine Co., Charlotte, N. C. Booth 101. Type K bobbin stripper, bobbin box hoist, Termaco roving-bobbin cleaner, bobbin conveyor; also spools; card-room bobbins; Denman pickers, lug straps and hold-ups; Durant Productimeter counters; Economy balers. Rep.: E. A. Terrell, W. S. Terrell, A. C. Kimbirl, John J. Wilson, R. B. Smith, Irwin P. Graham.

Texas Company, Atlanta, Ga. Booths 455-456. Textile lubricants and processing oils, also general petroleum products. Rep.: F. C. Kerns, A. F. Brewer, P. H. Baker, H. L. Marlowe, E. A. Harper.

Textile Bulletin, Charlotte, N. C. Booth 204. Textile publishers.

Textile-Finishing Machinery Co., Providence, R. I. Booth 114. Featuring pair of textile electric guiders on floor stands with latest type rectifier unit; latest type automatic cutting-off winder; six cylinder upright dryer having many new details in construction, also general line of textile finishing equipment. Rep.: James Cook, H. G. Mayer, W. Taylor, A. H. Goff.

Textile Specialty Co., Inc., Greensboro, N. C. Booth 477. Featuring first showing of "Truweave Rugged Ribbed" reed, showing also Truweave reeds and combs, and Gibbs shuttle-truing machine. Rep.: L. C. Atkinson, F. A. Decker, F. O. Gibbs.

Textile World, New York, N. Y. Booth 214. Textile publishers.

Todd Co., Rochester, N. Y. Booth 343. Checkwriting and signing equipment, payroll systems, checks. Rep.: H. D. Archer, E. C. Wood.

Toledo Pipe Threading Machine Co., Toledo, Ohio. Booth 479. Pipe tools and power pipe machines. Rep.: W. R. Vosper, Don Coleman, H. Tiernan.

Toledo Scale Co., Toledo, Ohio. Booths 460-461. Featuring latest developments in cotton-lap scales and complete line of precision textile weighing equipment. Rep.: M. E. Holmes, W. M. Randolph, W. F. MacKinnon, Edgar B. Heape, J. A. King, T. E. Stewart, R. S. Marshall, D. E. Armstrong.

Tolhurst Division, American Machine & Metals, Inc., New York. Booth 342. Featuring improved 48-in. center-slung motor-driven textile extractor, 30-in. solid curb motor driven textile extractor. Rep.: J. R. Angel.

U S Bobbin & Shuttle Co., Lawrence, Mass. Booth 237. Bobbins, spools, and shuttles of all kinds; shuttles incorporate Jackson and U. S. tensions. Also, flat bobbins for winding and the wide shuttle required for that type of bobbin. Rep.: L. K. Jordan, E. R. Holt, M. Ousley, C. S. Jordan, A. D. Roper, T. A. Francis, Charles H. Jordan.

U. S. Gutta Percha Paint Co., Providence, R. I. Booth 201. Interior and outside Barreled Sunlight products for use in painting in textile mills and villages. Rep.: A. S. West, J. S. Palmer, L. K. Palmer, William M. Moore, William H. Patrick.

U. S. Ring Traveler Co., Providence, R. I. Booths 433-434. Ring travelers for spinning and twisting. Rep.: W. P. Vaughan, O. B. Land, T. L. Maynard, W. H. Rose.

U. S. Steel Corp., Pittsburgh, Pa. Booth 417. Featuring stainless steel and lifetime shingles, also other steel products applying to textile construction and operation. Participating companies include American Steel & Wire Co., Carnegie-Illinois Steel Corp., Cyclone Fence Co., Columbia Steel Co., National Tube Co., Scully Steel Products Co., Tennessee Coal, Iron & Railroad Co.

Universal Winding Co., Boston, Mass. Booths 234-236. Featuring Roto-coner equipped for winding paper cones and special attachments for a variety of winding; and No. 90 filling-bobbin winder equipped for winding regular automatic loom bobbins and flat bobbins of rayon rayon, this machine equipped with Disc-Quil tension. Rep.: R. A. Leeson, E. O. Smith, Robert Leeson, T. L. Cotter, R. L. Chisholm, I. E. Wynne, R. M. Mauldin, J. W. Stribling.

Veeder-Root, Inc., Hartford, Conn. Booth 107. General line of textile counters; featuring new 2-3 pick counter and new 2-3 hank counter; also counters for spinning frames and yardage. Rep.: Edwin Howard, J. V. Verner, R. W. Bailey, G. H. Anthony, J. H. Chaplin, A. E. Kallinich.

Vermont Spool & Bobbin Co. Inc., Burlington, Vt. Booths 423-426. Twister bobbins and spools for cotton, woolen, and worsted manufacture. Rep.: Mr. Tiffany.

Victor Ring Traveler Co., Providence, R. I. Booth 250B. Ring travelers. Rep.: B. F. Barnes, Jr., N. H. Thomas, E. R. Jerome, and J. E. Hull.

Walker Electrical Co., Atlanta, Ga. Booth 113. Pedestals for above-floor wiring or on ceiling below; combination floor box and pedestals, pedestals for all types of switches, test blocks and test plugs, pull boxes and junction boxes, metering equipment for plants and housing, panelboards and distribution centers for plants and housing use. Rep.: R. M. Walker, K. D. White, H. O. Burnside, W. P. Christian, W. A. Hitchcock, J. D'Arcy, O. M. Carnes, C. W. Strong.

Watson-Williams Mfg. Co., Millbury, Mass. Booths 121-122. Shuttles, heddle frames, heddles, bobbins, stripper, cotton and wool cards. Rep.: Wilbur L. Watson, Clifton E. Watson, Hubert J. Watson, D. C. Ragan, E. V. Wilson.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Booth 465. Loom motors and loom-motor control; spinning-frame motors and spinning-frame motor control; newest instruments and measuring devices; switchboards; automatic circuit breakers; and the "cross-field" type Flexarc welder with precision arc control. Rep.: Thomas Fuller, John Gelzer, Jr., J. W. Brooks, M. A. Land, E. S. Lammers, J. H. Reeves, Jr., A. D. Snipes, John C. Boesch, C. L. Speake, A. W. Rose, T. C. Kelley, G. D. Bowne.

Wheeler Reflector Co., Boston, Mass. Booth 301. Mercury-vapor lamp fixtures, vapor-proof fixtures for hazardous locations, inspection lights, general textile-mill lighting fixtures. Rep.: H. A. Barnes, R. H. Witherspoon.

Whitin Machine Works, Whitinsville, Mass. Booth 251. Show three cotton roving frames as follows: first, 8x4x7, equipped with long-draft system, on 3.25 hank roving, drafting 7.22, with 10x5 creel bobbins; second, 8x4x7, equipped with super-draft, making 3.25 hank roving, with draft of 24.18; third, 10x5x9, equipped with inter-draft, making 1.70 hank roving from 62 grain sliver, with a draft of 12.65; long-draft spinning frame of latest type, 3¼-in. gage, with 1¾ in D. A. rings, running on filling wind, 7½-in. traverse, spinning 30s warp from 3.25 hank double roving; accessories, including spindles, flyers, rings, rolls, gearing, etc. Rep.: E. K. Swift, W. H. Hoch, F. E. Banfield, Jr., R. J. McConnell, James L. Truslow, Carl Brandt, James F. Marshall, William H. Porcher, R. I. Dalton, Mason P. Thomas, A. B. Moss, I. D. Wingo, M. J. Bentley, M. W. Keeler, W. D. Lyerly, P. M. Willingham, F. E. Bozeman.

Whitinsville Spinning Ring Co., Whitinsville, Mass. Booth 203. Complete line of rings and holders for spinning and twisting. Rep.: W. P. Dutemple, H. R. Broch.

Jacques Wolf & Co., Passaic, N. J. Booth 326. Chemical specialties for textile processing. Rep.: G. J. Desmond, C. R. Bruning, Jr., G. W. Searell.

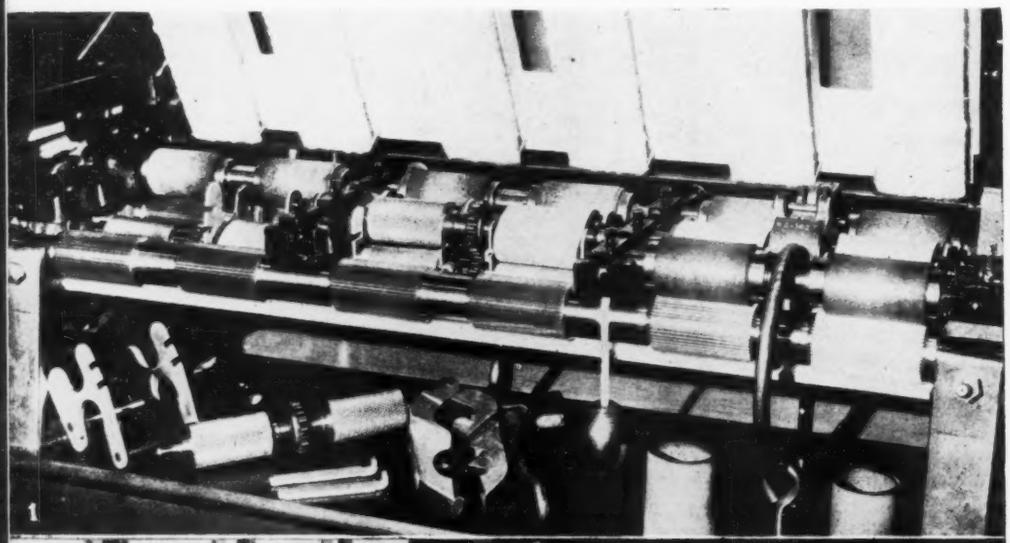
Yale & Towne Mfg. Co., Philadelphia. Booths 321-322. Electric industrial trucks, hand-lift trucks, skid platforms, chain hoists, lifts. Rep.: M. G. Peck, G. Sherrill, R. E. Wilson.

ROVING GOES LONG DRAFT

Change to single process promises to hold spotlight as outstanding trend of 1937 in cotton manufacture

TEXTILE manufacture grows simpler. Twelve years ago long-draft spinning began to replace some of the cotton roving processes. Ten years ago the reduction of cotton picking to one operation was begun. Recently worsted mills began to reduce the number of their drawing operations. Just a month ago a silk and rayon doubling and twisting machine which consolidates three throwing operations was announced.

When J. Foster Smith, late agent of the Naumkeag Steam Cotton Co., said in 1929 that long-draft spinning would eventually become standard in the major portion of the cotton industry, many mill men did not agree with him. With the system being adopted at the rate of 1,000,000 spindles per year, few will now care to dispute such a statement.



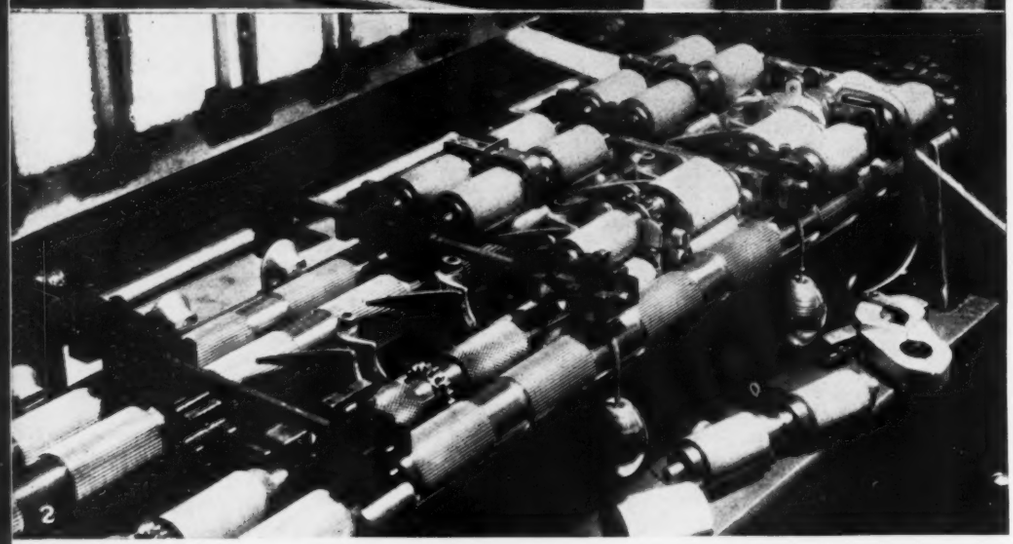


Fig. 1. (upper) Whitin-Casablancas long-draft roving

Fig. 2. (lower) Whitin Superdraft roving

Thus, while the fine end of the roving job is still being cut off by installation after installation of long-draft spinning, work is already being conducted on the intermediates and slubbers to shorten the whole business still further. In fact, application of long draft to the slubber has progressed to such an extent that in some cases long draft in spinning appears to be superfluous.

Ultimately, of course, no more than one drafting operation will be necessary to convert drawing sliver to yarn; but, although the handwriting to this effect is on the wall, the mills are not financially prepared now to abolish roving altogether, even assuming that it is already mechanically possible to do so. Therefore it is certain that the general adoption of long-draft roving is the next great step in cotton-yarn manufacture. The equipment is ready and waiting in the shops of the machine builders.

First Long-Draft Roving

Probably the first information made public on the development of a long-draft roving system was contained in a paper by James L. Truslow, of Whitin Machine Works, Whitinsville, Mass., presented at a meeting of the American Society of Mechanical Engineers, in Greenville, S. C., and published in the November, 1932, issue of TEXTILE WORLD.

A recent view of the equipment described at that time is given in Fig. 1. It is a long-draft intermediate shown in various stages of assembly. The first drafting unit at the left carries only the back-roll boss. The second has the Casablancas cradle applied, and the lower apron is over the knurled middle bottom roll. The third unit carries the knurled top-roll boss, and at this point should be noted the gearing between bottom and top rolls located between the bosses of the third and fourth drafting units. It is by this means that the top roll is driven positively from the bottom roll. Next the top apron is shown in place; and finally, in the last two sections, the front roll, gear cover, and weighting have been applied. The system is simply the Casablancas long-draft spinning principle modified for use in roving.

In another paper presented before the same society on January 28, 1937, Mr. Truslow declared that more than 80,000 spindles of this system have already been installed, supplying over 1,000,000 spinning spindles.

Although an intermediate is employed as the basis, the creel is usually removed and the machine run as a slubber, producing roving as fine as 1.10-hank from 60-grain sliver of 1-in. carded cotton. Drafts may range from six to ten. The same system is also applicable to fine frames (sometimes called second intermediates), in which case roving coarser than 3.00-hank can be produced direct from short-draft slubber roving. For finer roving the process is preceded by a long-draft slubber. As against the use of a single-

process roving frame for fine work, the two-process system requires less investment in sliver cans, occupies less floor space, and requires no re-arrangement of machinery.

Superdraft System

In September, 1934, TEXTILE WORLD explained how this same machine builder, through the adoption of a mechanism for inserting false twist in the roving, succeeded in combining a long-draft slubber operation with a roving operation to produce what was to be known as a "Superdraft" roving system. Of this system and its subsequent improvement Mr. Truslow, in his recent paper, had the following to say:

"At first we used a drafting system consisting of six lines of rolls. This was divided into two drafting stages, each made up of three lines of rolls. The first drafting stage, which was equipped with the Whitin-Casablancas long-draft arrangement did the major part of the drafting. The flat ribbon of cotton delivered by the first stage was twisted, or rather condensed, into a round roving by revolving heads and then passed through the second stage. This consisted of three lines of ordinary rolls.

"This system produced excellent roving and is still used by some thread mills and others where extremely long drafts are desired on combed work of high quality. It proved too complicated, however, for the average mill and, by a process of simplification, has evolved into the present Whitin Superdraft system. This has only four lines of rolls, divided into two drafting stages of two lines each. The twister head has been replaced by a simple and ingenious narrowing guide which takes the ribbon of cotton delivered by the first drafting stage and turns it up 90 deg. on to its edge. In this position, it enters the rolls of the second drafting stage. The long-draft unit has been moved into the second stage for greater accessibility in cleaning."

The present Superdraft system, in various stages of assembly, is shown in Fig. 2. Note particularly the wing-shaped guide which serves to turn the roving on edge and counteract its natural tendency to spread as it passes through the drafting rolls.

Interdraft System

Still another Whitin long-draft roving system is illustrated in Fig. 3. Again quoting: "With the drafting range of the Whitin-Casablancas system ending at about 10 and the economical range of the Superdraft system beginning at 18, or thereabouts, a gap existed. A system has been devised, more powerful than the Whitin-Casablancas but less expensive than the Superdraft, to fill this need. It is known as the Whitin Interdraft system and is exactly similar to the Superdraft except that the long-draft leather bands and their supporting parts are omitted. Both the first and second drafting stages consist of two lines of ordinary drafting rolls. The narrowing guide between the stages is, of course, retained. The Interdraft system does very good work at drafts of from 10 to 16 and is best adapted for use on frames producing first-intermediate bobbin sizes and hanks of from 1.20 to 2.00 directly from can sliver."

Saco-Lowell System

During this period of development other machinery firms were working out long-draft roving systems. One of these, the so-called Controlled-Draft Roving System, is a product of Saco-Lowell Shops, Boston, Mass. It was first described in the October, 1934, TEXTILE WORLD; and a recent view of it is given in Fig. 4.

The Saco-Lowell machine is a slubber with four lines of drafting rolls, of which the third encountered by the stock is of radically new construction. In both of the sections shown in Fig. 4, the front top rolls have been removed to afford a better view; and in the case of the right-hand section, the top member of the special pair of rolls referred to has been taken off and laid on the shelf below. Note the rings on the bottom member which fit into the grooves in the top member.

The trumpets, which are located as usual on the traverse bar, are more or less oblong in shape and feed the drawing sliver to the back rolls in the form of a ribbon. The top and bottom back rolls, both metallic, are heavily fluted to provide a strong grip on the fiber.

The next pair of rolls consists of a bottom steel fluted roll and a weighted, cushioned top roll. Drafts between this pair of rolls and the back rolls range from 3 to 8.

Between this point and the pair of special rolls, which are known as folding rolls, there is a draft of 1.08, just sufficient to keep the strand tight. The folding rolls are held in a lower position than the other rolls, and the strand

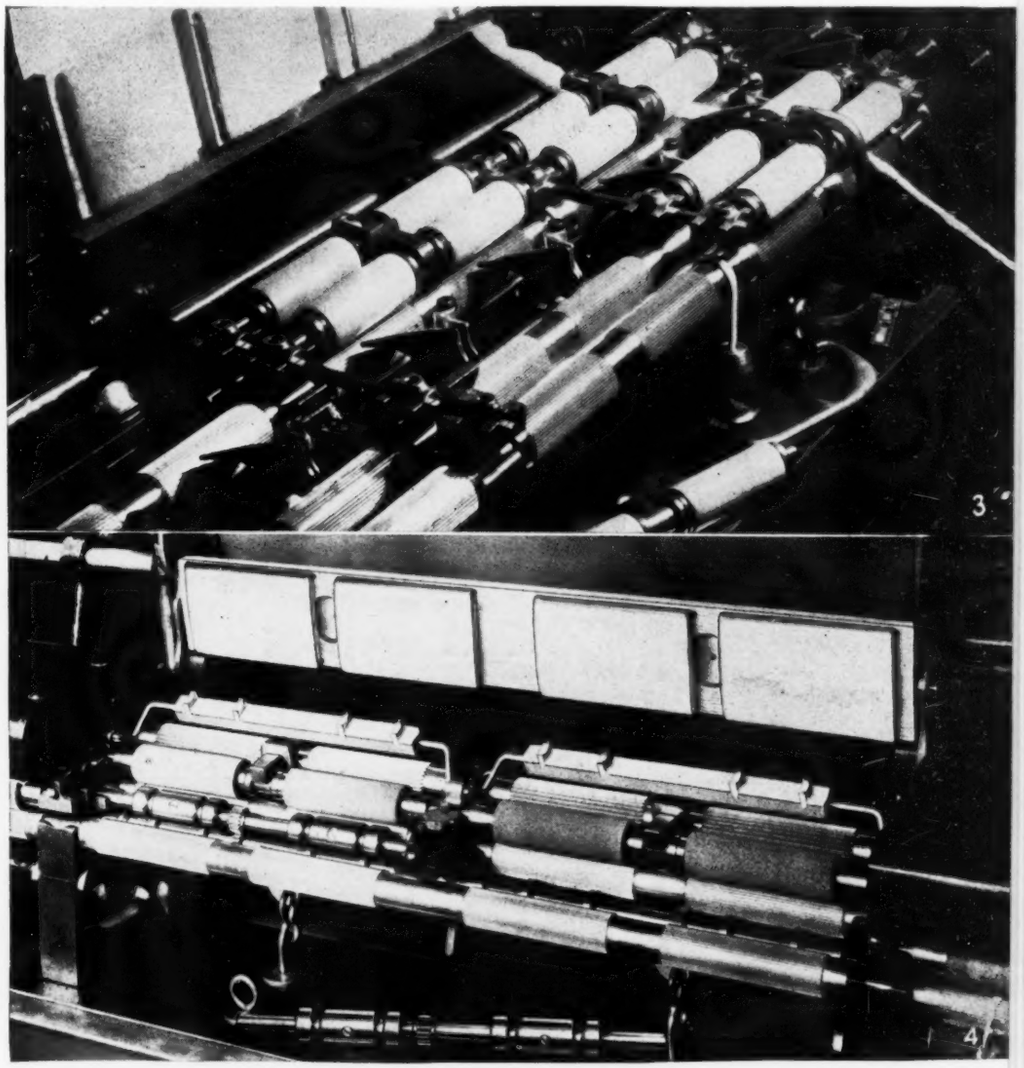


Fig. 3. (upper) Whitin Interdraft roving

Fig. 4. (lower) Saco-Lowell Controlled-Draft roving

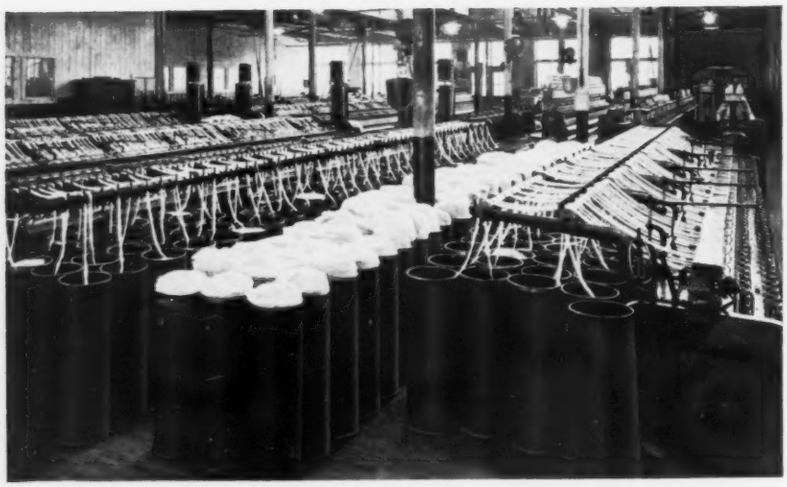


Fig. 5. Installation of Saco-Lowell system at Gluck Mills, Anderson, S. C.

of fibers encounters the edges of the groove in the top roll considerably before it encounters the nip between the bottom of the groove and the top of the ring on the bottom roll. The walls of the groove are so shaped that the edges of the strand are folded under before the compressing action of the nip takes effect, with the result that the flat ribbon of fiber is transformed into a concentrated, rectangular mass before it is subjected to the final drafting operation.

This final drafting takes place between the folding rolls and the front rolls, which consist of a standard bottom fluted steel roll and a weighted, cushioned top roll. The draft range here is from 4 to 10.

The Saco-Lowell Controlled-Draft Roving System has been installed in well over 100 mills throughout the world. The entire system was discussed in more detail than is possible here by A. K. Landau in the December, 1936, issue of the Saco-Lowell *Bulletin*. A typical installation is shown in Fig. 5.

H & B American Machine

The machinery firm to enter the field of long-draft roving equipment most recently is the H & B American Machine Co., Pawtucket, R. I.; and this concern is now offering a choice between two widely different machines.

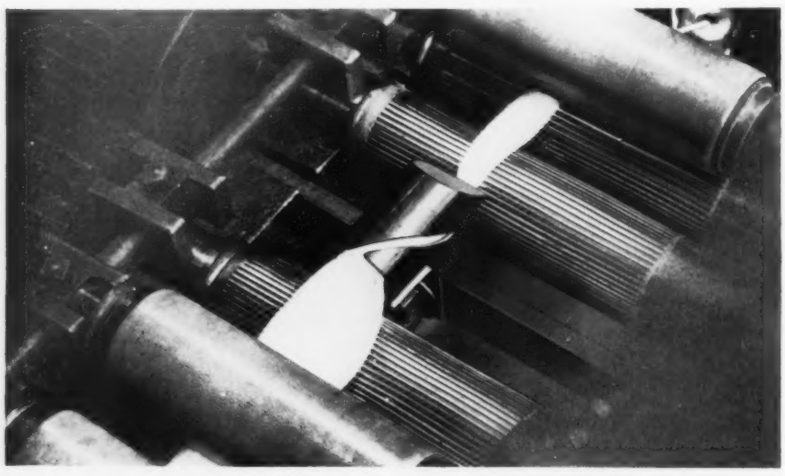
Since H & B has long advocated the attaining of long draft in spinning by the relatively simple addition of an extra line of drafting rolls, it is logical that it should transfer the same idea to card-room machinery. Otto A. Belger, who has recently become a member of the H & B organization, explains the reasoning behind the adoption of this principle as follows:

"Time and again and by various methods it has been proved that a properly prepared drawing sliver is evener and subject to less variations than roving or even finished yarn. It further has been proved that the desired evenness from doublings in the customary three passages of roving frames is never attained. As the capacities of the regular three-line systems of drafting rollers of roving frames have been extended to their practical limits, it was necessary to adopt additional drafting means by adding one or two more lines of drafting rollers and thus convert the regular three-roller roving frames to four- or five-line systems. It has been proved that cotton can be effectively drafted by additional rollers, but after higher drafting it must be condensed into an even strand of fibers. If it were possible to condense the loose, widely-spread fibers into a homogeneous bundle without twisting, the following drafting operation would be simple and the fibers would offer no resistance owing to twist previously imparted."

As a means for controlling the drafted stock and condensing it into a bundle between two sets of drafting rollers, H & B has developed a so-called flared-mouth scroll condenser.

This device is shown applied to H & B's five-roll Superdraft speeder in Fig. 6. The top rolls immediately preceding and following the condenser have been removed to afford an adequate view. After the strand of fibers has passed through three pairs of drafting rolls, it enters the condenser.

Fig. 6. H & B five-roll Superdraft speeder



Operation of Scroll

Mr. Belger explains the operation at this point as follows: "The elliptical-shaped flared mouth of the scroll condenser folds the edges over in a very natural way without crowding the loose fibers; and, by folding the naturally thinner selvages toward the thicker center, this condensing action results in an even strand. Furthermore, the rather peculiar action of this scroll condenser is to turn the condensed ribbon gradually over, giving it an actual and continual one-half turn of twist, sufficient to lay all loose ends together and give the strand a certain amount of strength and body. In consequence, the succeeding pair of drafting rollers has a condensed and substantial strand of fibers to deal with, rather than a hit-or-miss bunched-together bundle. On the other hand, since this is only a false twist, the next drafting operation can be stepped up considerably without any undue strain on the fibers. As static plays a very important part in cotton manufacture, it was decided to make this new device from a non-metallic material, Bakelite, a non-conductor of electricity."

The four-roll system is identical with the five-roll, except that the number of lines of rolls in the back drafting section is reduced by one.

Drafts Permitted

This principle permits the use of drafts as high as 18; and therefore, from 60-grain drawing sliver can be produced a 2.50-hank roving, which is just within the range of 9x4½-in. intermediate frames. This roving may be spun either single creel and regular draft or double creel and long draft to 20 to 22s warp or filling yarns. On the five-roll system the first draft may be 1.25; the second draft, 3.5; and the final draft, 4.2. On the four-roll system the first draft may be 3; and the second

raft, 4. The stock is not drafted as passes through the condenser.

Multiple-Draft System

The other long-draft roving system fered by H & B American Machine o. embodies the Harris principle of rafting first described in the January, 1934, issue of TEXTILE WORLD; and it therefore the most revolutionary hange offered in roving equipment in more than 30 years.

The Harris principle can be most simply explained by the statement that it involves the revolving of the drafting rolls about the axis of the sliver or roving in addition to revolving them in the usual way. The object is to insert a false twist in the strand as a means of condensing it and controlling the fibers. This principle, as applied to the H & B One-Process Multiple-Draft roving frame, allows drafts up to 100.

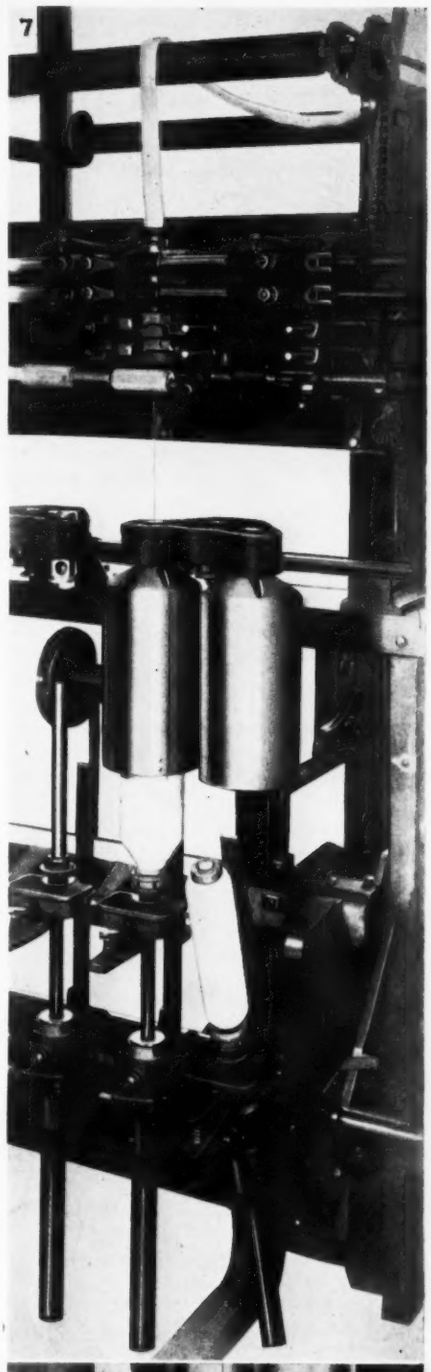
As may be seen in Fig. 7, the sliver first passes vertically downward through two pairs of all-metallic drafting rolls. It then encounters the first pair of Harris rolls, which are not only revolving toward each other to pull the strand but are also revolving horizontally to twist the strand. Only the casing around these rolls is visible in the photograph. Next the strand encounters another Harris revolving unit which is identical with the first, except that it revolves in the opposite direction. This further attenuates the strand. The fibers then pass through a final pair of drafting rolls to the flyer. The twist is removed between the second revolving unit and the last pair of rolls. The drafts which may be used at each stage for the production of three different hanks of roving are given in the accompanying table.

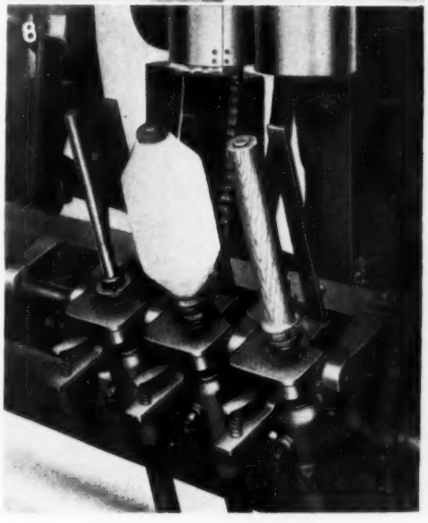
The radically new design of flyer is shell-like, with a regular presser foot operated within the so-called flyer bowl. Mr. Belger reports that, since there is no danger of high spindle speed spreading the legs of flyers or of causing the flyers to set up air current detrimental to good running, it is possible to operate at flyer speeds well above 2,000 r.p.m., about double the usual speed.

The ingenious manner by which the new machine may be doffed is illustrated in Fig. 8. The operator pulls a lever to lower the bobbin rail and then pulls another lever to tilt the whole bobbin rail forward and outward so that the bobbins can be removed with little effort. The whole doffing operation is thereby considerably shortened and simplified. Mr. Belger points out that this reduced doffing time, plus the high production of the machine and the fact that it eliminates all but one of the roving processes, tends to counteract the higher investment which the machine calls for.

Fig. 7. (at right) H & B One-Process Multiple-Draft roving

Fig. 8. (lower right) H & B Multiple-Draft frame ready for doffing





Drafts on H & B One-Process Multiple-Draft Roving Frames

Drafting Stage	For 4.25-hank	For 8.50-hank	For 14.50-hank
Back Stock, 60-grain sliver	.139 hk.	.139 hk.	.139 hk.
Draft between two pairs of rolls	1.5	2.0	2.1
Draft between rolls and first revolving unit	3.0	3.0	3.4
Draft between first and second revolving units	3.4	3.4	3.5
Draft between second revolving unit and front rolls	2.0	3.0	4.2
Total drafts	30.6	61.2	104.5
Approximate production per spindle in 80 hr	30.00 lb.	12.00 lb.	6.25 lb.

Totally Eliminate Roving?

In conclusion, it is interesting to consider that many, and perhaps all, of the long-draft roving processes now available were evolved from attempts to eliminate the roving operations altogether. Unquestionably, efforts to reach this ultimate goal will be continued; but it is important to note that the more the roving process is simplified, the less becomes the immediate need to abolish it. This fact, plus the far greater investment which would be required to replace present spinning equipment with machines capable of drafting direct from drawing sliver, renders it fairly certain that the next great step in cotton-yarn manufacture will be the general adoption of long-draft roving.

Modern looms require modern

LOOM LUBRICATION

By Ivar Moberg

YEARS ago, when weavers ran plain looms and did their own oiling, excess oil was the rule rather than the exception. This was probably due to the fact that on those looms there were few places where oil was needed. With the installation of automatic looms having numerous motions requiring lubrication, the oiling became very scant on certain moving parts, while other parts still received excessive oil. Then came the high-speed looms of today, which made both the oiling in itself and the selection of the type of lubricant to be used very important matters.

Despite the increased importance of proper lubrication to the satisfactory running of looms, we often see loom motions completely worn out for lack of lubricant. The most neglected motions in this respect are: rocker-shaft bearings, parallel motion, picker shaft, treadle rolls, take-up gears, take-up-roll bearings, protection motion, cutter motion, temple cutter, temple burrs, top rolls, top and bottom sheaves, beam bearings, whip-roll bearings, transferring motion, binders, shipper motion, warp-stop motion, filling-stop motion, feeler motion, cloth-winding motion, let-off motion, and lay guides.

If we were to dismantle looms for the purpose of inspection as to proper oiling, it is safe to say that in nine looms out of ten we would find one or the other of the above-mentioned motions badly worn for lack of oil.

Some mill men figure that, since the cost of replacement of a worn part is relatively small, it does not mean such an awful lot. This way of thinking might be correct if we had to consider only the replacement cost alone, but we have to add the cost of lowered production and the poorer quality of the woven fabric. These losses are always bound to occur before the worn part is so bad that it has to be replaced, and they often run many times greater than the cost of replacement.

No machine will run well with worn parts, and the loom is least of all an exception. Proper oiling of looms is as important as proper food for human beings. To illustrate this, take such an insignificant part of the loom as the friction let-off levers. When these are functioning to perfection, they should move very slightly up and down for each pick as they let off the warp. In many instances the oiling of these levers has been so neglected that they move very resistingly on their pivot support. Their free movement is therefore arrested, and an uneven let-off of the warp results. This causes uneven cloth —the most serious and most frequent of all defects in weaving.

Meeting Tradition

The tradition of oiling looms in a certain way is so deep-rooted in some mills

that a change for the better is not easy to bring about. Often this tradition is brought down from the time of plain looms, the men responsible failing to recognize the importance of reducing loom stops and defects to a minimum with weavers running multiple-loom sets.

The assumption prevails in many mills that oiling of looms can be done by anyone. Often we find old, feeble men or young boys who do not know anything about looms and mechanics being intrusted with the oiling. This is a false and costly assumption. If we have modern automatic looms, with their numerous places to lubricate, we should have for oiler a man who knows looms and who has a knowledge of mechanics. A machinist, who has worked on repairing loom parts worn out because of lack of oil, would be an excellent man to be trusted with the lubrication, after proper instruction in this work has been given him.

Also, the responsibility for lubrication in general throughout the mill should be taken away from the ordinary overseers and assigned to a special head who will, and can, take the responsibility. This man must understand the suitability of various lubricants in each specific instance throughout the mill and make a study of the latest developments. A talk now and then with the engineers of the lubricant firms, who are always willing to assist, would quickly bring the knowledge of the mill lubrication head up to the very latest developments in lubrication and make him of the highest value to the mill. It is safe to say that such a lubrication head in the mill would save many times his salary in reducing supplies, cutting the lubricant cost, reducing—if not practically eliminating —oil spots and stains on material in progress, increasing the production and quality of the mill products and reducing the fire hazard due to lack of lubricant. Some of the most up-to-date mills have been quick to realize the need for a mill lubrication engineer and have employed one. Some mills have even in their employment a lubrication chemist who works in cooperation with the engineers of the lubricant firms to obtain the highest efficiency and economy.

A mill, which I am not at liberty to identify, spends tens of thousands of dollars on repair parts alone during the course of a year. About three-quarters of the total is expended for parts for the weave room alone, and it is undoubtedly the case that proper lubrication could reduce this amount very considerably.

Evidence of Saving

In one actual case where supervised lubrication was installed, with the responsibility of oiling coming under the mechanical division, an actual saving of $3 per loom per year in oiling labor alone resulted. This was primarily due to the better distribution of the work in the weave room and the greater efficiency with which the work was done. Coincident with this were marked reductions in maintenance costs and the amount of defective goods resulting from oil spotting.

The first thing to be considered is the type of oil best suited for plain bearings. Until recently it was generally conceded that a straight mineral oil

was not the type that was suitable for looms with their jerky and slapping motions, which have a tendency to force the oil out of the bearings and spatter it on the material in the looms. Then oils described as "semi-fluid," "non-fluid," and "liquid grease" appeared on the market. These lubricants have soap, paraffin, or other compounds added to give the oil a body that will adhere to the moving parts of the looms and also to give it a great resistance against rupturing of the oil film under severe conditions. These semi-fluid oils vary in consistency from very light grades of oils to soft greases used in ordinary types of pressure guns. The proper consistency of semi-fluid oils depends on the application and frequency of lubrication.

More recent developments of straight mineral oil from certain types of crude-oil sources have produced a lubricating oil of the desired film strength and adhesive quality necessary to withstand the operating conditions of the loom. These oils are of a higher viscosity than is normally used for general machine lubrication, such as line shafts and medium-sized plain bearings of ordinary bearing pressure and speed. They range in viscosity from 900 seconds minimum to 2,000 seconds maximum at 100° F. on the Saybolt Universal Viscosimeter. These technical terms mean the number of seconds a certain quantity of oil heated to 100° F. requires to flow through the orifice of the meter. It is a measure of the viscosity, or consistency, of an oil, but has no bearing on the lubricating quality. (Steam cylinder oil and other types of special oils are usually tested at 210°F.)

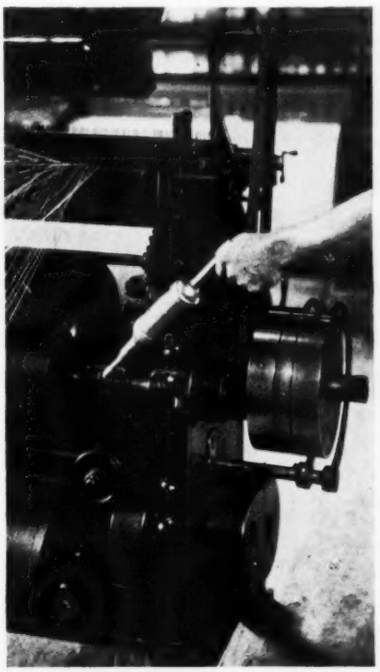
It is very important that we choose an oil with proper viscosity and high lubricating quality in order to obtain the greatest efficiency. For old and worn bearings it is advisable to use a somewhat heavier oil than on new, tight-fitting loom bearings.

Oiling Methods

In using the heavy oils mentioned above, the mechanic should be equipped with oil cans of the pump-action type which will force the oil out of the spout at a moderate pressure. This pressure is about 100 lb. to the square inch at the tip of the spout. The cans are equipped with cone-shaped spout tips which seat well in the oil holes and force the oil into the bearings instead of running back over the top and onto the floor. There is no drip from the spout between each pump stroke, and the oiler can move from hole to hole without the oil dripping.

Before any oiling is started, the oil holes must be cleaned. To pour oils of high viscosity in oil holes clogged with lint and dirt will result in little, or no, lubricating effect, as the oil rarely will reach the surfaces of friction. With light, ordinary machine oil, the lint, if not too hardly packed, may act as a wick and allow some of the oil to reach the surfaces of friction; but with heavy oil it is almost impossible for the oil to get by the lint, especially if this is packed hard in the holes. The oiler should therefore be equipped with an oil cleaner. This may be made by using a piece of wire and hammering out one end in the shape of a spoon with thin edges. The other end of the wire is placed in a wooden handle to insure a better grip when the wire is twisted around in the oil hole previously to lifting out the lint and dirt.

The oiler should be instructed to oil the looms systematically. He should always start on the same oil hole and work through the loom in a given order. If he does not, he will miss oil holes here and there. This was forcibly brought out some time ago when two loomfixers and the writer had a contest in oiling looms without missing any places. We all failed and the best of us had missed half-a-dozen places. With a set routine, each place of lubrication is attended to in a specific order and no place is missed. This routine becomes a habit.



On the ultra-modern looms there seems to be a tendency to switch over to high-pressure lubricating systems. In these systems, the grease is forced under terrific pressure into the bearings where it will do the most good. The pressure may be as high as several thousand pounds per square inch if there is resistance to the grease entering the bearings. Two types of grease guns are available—one builds up the pressure by screw action, and the other by pump action. An advantage of high-pressure lubrication is that there is rarely, if ever, any trouble with clogged oil holes, since the holes in the pressure fittings are so small that lint and dirt cannot easily enter. All that is necessary is to see that the pressure fittings themselves are wiped off before the application of the gun. After application, the small amount of excess grease should be wiped off the fittings. Bearings on older looms can, of course, be equipped with fittings for high-pressure lubrication, but it is necessary to cut grease grooves in the bearings. Without these grooves high-pressure lubrication does not work out very well.

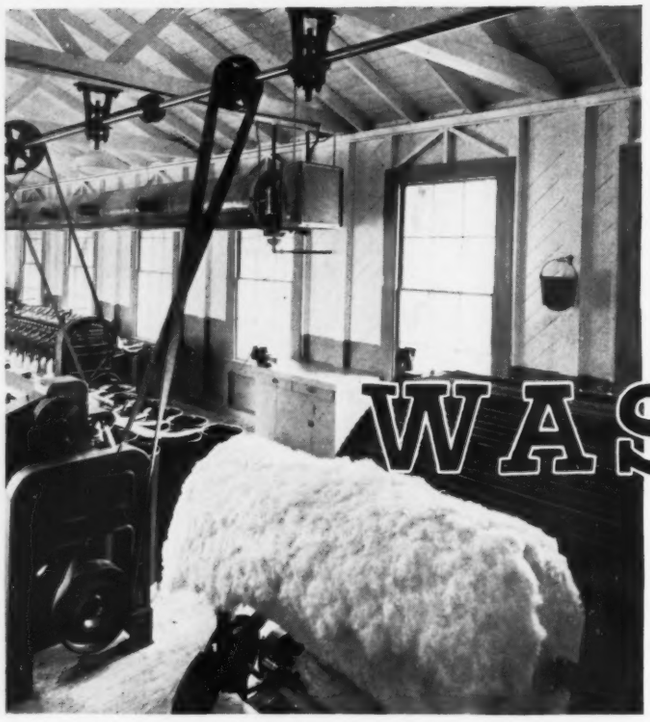
Anti-Friction Bearings

Some of the modern looms are also equipped with anti-friction bearings. These may be installed on crank, cam, and rocker shafts; harness motions; take-up roll; friction gears; automatic let-off motion; etc. The application of anti-friction bearings is the highest standard of loom mechanics and their object is to preserve the high precision with which these looms are built. Some day we shall have looms equipped with anti-friction bearings throughout.

In using high-pressure lubrication in anti-friction bearings, there is one thing that must be guarded against and that is overfilling the bearing housings. These should never be filled more than from one-third to one-half full. If excessive grease is forced into anti-friction bearings, it will cause friction through "churning" of the grease and may even result in overheating if the speed is high. This is just opposite to what would happen in a plain bearing. Sealed anti-friction bearings need not be greased oftener than once every three or four months, if a suitable grease is used.

Another lubricating system used on ultra-modern looms is the central or one-shot system. In this system an oil reservoir or container, with a plunger arrangement, is located on one side of the loom. Pipes lead from this oil reservoir to the bearings. When the handle of the plunger is depressed, 2 cu. in. of oil is released and distributed under pressure to 37 bearings. It is the quickest method of loom lubrication that there is.

NOTE—Through error, the concluding section of Mr. Moberg's article in our February issue was incorrectly presented. Starting with last sentence in first column, page 63, it should read: "These levers are set close to the extreme positions of the harnesses, each suitably connected to an empty drop wire which it supports in an elevated position. As a strap breaks, one end of the harness will either rise above or drop below the extreme running position. This disturbs the normal position of the levers, which permits the drop wire to drop and arrests the free movement of the warp-stop motion. The loom is thus brought to an immediate stop, eliminating long pick-outs."



WASTE

Can sink profits in a cotton mill

By W. A. Hunt

Superintendent, Pickett Cotton Mills
High Point, N. C.

I ONCE read an article, "Beware of the Floating Mines," that I shall always remember. There is a lesson for every section man, second-hand, overseer, and superintendent in the story told by Winston Churchill of the famous failure of the British campaign against Gallipoli during the World War. Some of England's most formidable battleships were drawn up for a surprise dash past the land batteries, but the wily Turks dropped many small mines into the water the night before and ship after ship was hit. Mill men today find it as necessary to plan carefully for success in business as leaders plan for victory in war, yet at all times a string of little floating mines lies ahead. A particularly dangerous mine of the profit-destroying group is waste.

We know that most of the waste made in a cotton mill occurs in the opening, picking, and carding processes. In fact, the remainder of the waste made throughout the mill can be reworked and thus reclaimed; but droppings from the openers, pickers, and cards go into the waste pile to be sold at a loss. Even with reworkable fiber, if we make 10% waste in our card room, it means that the preliminary machinery must produce 10% more than it would if no waste were made. It is easy to see what an enormous amount of money all of us who are called superintendents are losing for our companies if we allow good cotton to be taken out along with dirt and motes. Still, I wonder how many of us inspect the droppings from our vertical openers, cleaning trunks, and other opening equipment? When we do inspect such waste, do we take the necessary corrective steps when we find that more cotton is going through the grids than should be?

Lap Waste

There is only one real reason for lap waste being made and that is because the operator does not start the cotton right on the lap pin, either lapping it over too much or wadding it in a bundle. The overseer should see that all laps are started correctly. Split laps are made by putting too much waste in the cotton or by having excess draft on the pickers.

Laps should never be taken off the cards until they are entirely run out. They must be watched and not allowed to run in double. If they do this, the cotton will wad up, ruin the clothing, knock out the screen ribs and mote knives, and ruin the lickerin. In order to prevent waste from the card sliver in front of the cards, chokes should be kept out from under the doffers.

No white waste should be allowed on the floor; but if it does get there, it should be picked up and never swept up. There also should be a handy place in which to put it. There is a considerable amount of waste made because of cans running too full, allowing the stock to fall on the floor. This is caused by carelessness on the part of the overseer, as an operative will do just what his overseer lets him do. An experienced hand knows when to doff cans.

There is no reason why any waste should be made on the drawing frames if the mill has skilled labor and good work up to these machines. If the spoons are of the proper weight for the sliver being run, there is little chance of making singlings. The practice of picking up a handful of sliver to find the end, instead of getting the end off the top of the can, is nothing but a habit and should be fought by all overseers of carding.

Most of the waste made on the slubbers is made by the operative while creeling. Some poorly trained workers simply stick the end of the full can of sliver through the machine, break the piece down, and empty it into the waste can. What they should do is to take the small amount left in the can, piece it to the full can, and place the piece on the top of the full can. There should not be any waste made in creeling slubbers, and the practice of allowing the roving to run over at the top or bottom of the bobbin is uncalled for. The frame is out of fix when it does this and it should be stopped and repaired.

All the waste that should occur on speeders is what little is made when creeling and what few singlings there are. Of course, there will be a few ends down occasionally, but that will cause a negligible amount of waste. As in the case of the slubbers, there should be no bobbins running over at the top or the bottom. Bad piecings will cause hard ends and make waste on both slubbers and speeders, but an experienced operative knows how to avoid making hard ends.

Cut Roving

Cut roving is a bad thing and there should be very little of it made if overseers are on the job. There is no

spinner living who can run cut roving successfully. When it is made, the best thing to do is to get it back into waste just as soon as possible; otherwise the room will be disorganized and the machines will all be making waste. An overseer can put one side of cut roving on each spinner and in a few hours every side in the room will be making waste. While the spinner is trying to keep that one side straight and running, all her sides will be neglected and in a little while she will be in a snowstorm of cotton. I know of nothing worse than cut roving. My experience has been that when a frame begins making cut roving it makes it until fixed. When it has been fixed, it should be doffed right then and there and the cut roving should not be allowed to go any further. It should be stopped and sent back to be worked over; in this way the waste from succeeding machines can be cut down.

Spinners' balls are caused by the ends coming down on the spinning frame and being allowed to run down for some time. There are several causes for this, and one of them is that the spinner has more work than she can run properly. Another cause is too high a speed, which kills production and fills the wastebasket. Other factors are trying to run with too little twist in the yarn, bad roving, bad roll covering, lack of proper oiling for the rolls, and not keeping the spindles plumbed and the steel rolls cleaned. Spinners' balls may also be produced if the overseer, second-hands, and section men do not look after their jobs properly. If a spinning frame is running at the proper speed, with the correct twist per inch and draft, with spindles plumb, rails lined and leveled, is properly geared and oiled, and is supplied with good roving, practically all balls will be eliminated and a good spinner can get along nicely on eight to sixteen sides, depending upon the count of the yarn.

Spinners should not be allowed to throw balls on the floor, and this is a matter that is also up to the overseer, second-hands, and section men. If a ball is found on the floor, the operative who dropped it should be called in and the necessity for keeping these balls in the pocket until deposited in the waste box should be explained. I want to repeat that even if conditions are perfect insofar as the mechanism of the frame is concerned, good spinning cannot be secured unless the operative has good roving.

Sweepings

Sweeping waste is one of the most important sources of loss in the cotton mill. I wonder whether most of us are inspecting this waste after it is collected, or whether it is merely left for the waste man to bale. If we inspect it either in boxes in the mill or in the waste-house bins (where it can be seen better), I am sure that we can take steps to reduce the percentage of strips, roving, and spinning waste, as well as thread waste from other departments, that is likely to go into the sweepings. If we can reduce the percentage of good fiber in this waste, it will help the pocketbook of any mill.

I urge readers of this article to inspect sweepings at least once a day to see if there is not some improvement that can be made by having sweepings picked up with more care. We know that much good cotton is dropped from laps at the back of cards and from sliver at the fronts. It is very easy to drop sliver all over the floor around cards, drawing frames, and slubbers. Long tails of roving may be dropped by operatives while creeling fly frames if great caution is not used by the overseer. All of this will go into sweepings if the sweeper is not properly trained.

Squandering Supplies

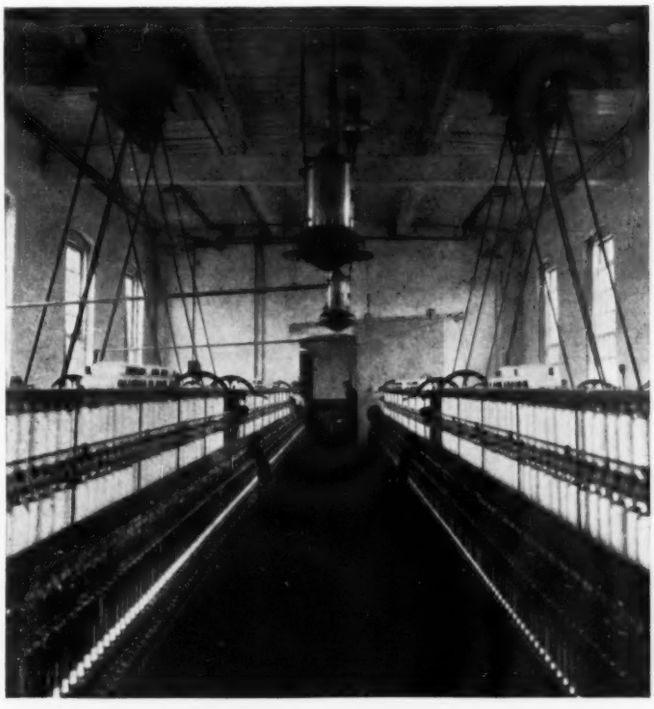
Another source of great loss lies in the wasteful use of supplies. In any mill, regardless of size, the total annual expenditure for such items as brooms, brushes, files, belting, oils, grease, crayons, roll covering, and other materials is very large. It represents a capital investment, and only the right care and use of these supplies can help to make the investment profitable.

Put it down as a fact, the proper use of all materials and supplies is one of the most important responsibilities of supervisors. Extravagant requisitions are often avoidable if a part is used rather than thrown away. Lights are often burned unnecessarily in many departments of the mill, and many mechanical devices are left to collect and rust before being used. These are just a few of the items that constitute floating mines in the mills. We should penalize by some method anyone who is responsible for excessive operating cost and added overhead and who does not exercise his authority to check it. Total losses of this kind very often affect the profit of the company.

It is good practice to furnish each section man with a weekly record containing an itemized statement of supplies used on his section and their cost. This should include such items as hacksaw blades, files, brooms, oil, grease, belt cost per foot, belt fasteners, etc. I use this system and find it very profitable.

Every group in the mill should understand that good equipment deserves good treatment, and I find it helpful to let each operative in our sections know the actual cost figures of the supplies he or she uses. It also pays to compile a list of the losses due to neglect and misuse and make it plain that in the end everyone pays for carelessness. This plan is effective because the employees will associate costs and materials so closely in their own minds that they will come nearer to handling mill supplies as if they were actual cash.

Our examples as superintendents should be equal to our expectations from others; and, with the proper effort, we can do much to reduce waste. Better results are the final test of good supervision; and the test is only partly met as long as equipment is abused and the toll of unnecessary cost is added to departmental operation.

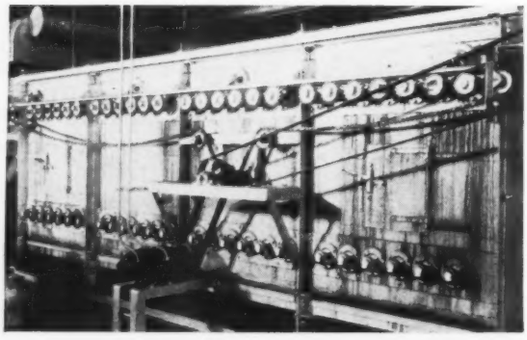


***THE AUTHOR** of this article does not limit "waste" to lost cotton fiber during manufacturing; he comments also on waste of supplies and gives means for reducing all sorts of waste*

Water drops, caused by improper ager conditions, can be

PRINTER'S NIGHTMARE

By Malcolm MacKay



WATER drops formed on fabrics before or during ageing can be veritable nightmares to the printer. When a water drop strikes the printed pattern before it is fixed on the goods, it will cause the color to bleed into the white and, consequently, to assume a lighter shade. An experienced ager operator should be able to determine the location of a water drip in the ager by the extent of bleeding of the printed color. If the drip occurs in or around the mouthpiece of the ager, the color will bleed to a very great extent. As the goods progress through the ager and the fixation progresses, the bleeding from water drops becomes less apparent. The operator can also stop the ager for approximately 1 min. and obtain, usually, several drips at one point. He can then check the time required for the spots to come out of the ager, figure the speed of the ager, and—in this manner—determine the exact point at which the drips are occurring. The principal causes of water spots are given below, together with suggestions for locating the exact source of the drip and for stopping the trouble.

1. *Holes in heating coils* located in a hood around the mouthpiece.—A number of mills construct a housing, or hood, around the mouthpiece of the ager. This housing is equipped with heating coils to prevent condensation, and an exhaust fan to carry off steam that escapes from mouthpiece as goods enter and leave the ager. If the operator suspects from its appearance that the spot is being caused by a hole in coils, he can turn steam off coils for a short time and see if spots continue. Elimination of this form of spot is obvious; either plug hole or replace coil.

2. *Disarrangement of bottom-plates.*—Most agers are equipped with a set of overlapping plates placed about 8 to 12 in. below the bottom rollers. The plates are so arranged that steam can come up around and between them. The purpose of these plates is to prevent water being blown onto fabric by incoming live steam, which enters below these plates. When agers are not supplied with desuperheated steam, superheated steam must be blown through several inches of water in bottom of ager. This water serves to desuperheat the steam. If one of these plates is out of place, the incoming steam may blow water or condensed moisture onto the cloth through the resulting opening. Elimination of this trouble also is obvious.

3. *Burlap flooring out of place.*—Where superheated steam is desuperheated in the bottom of the ager, a flooring of one to two thicknesses of burlap is placed over the bottom plates. Moisture may collect in the openings around the plates, and pressure of the incoming steam will blow this moisture onto the cloth. The purpose of this burlap flooring is to catch and absorb this moisture. This flooring is usually weighted with small pieces of scrap iron to prevent steam pressure blowing it out of place. This flooring is replaced periodically, every four to six weeks. If this flooring is out of place at one point, condensed moisture will be blown onto cloth. This trouble can be eliminated only by rearrangement and straightening of flooring, and this requires stopping of and cooling ager and entrance into ager by operator.

4. *Condensation caused by ill-fitting doors.*—If doors do not fit tightly or if packing around doors is worn, cool air will be allowed to enter around doors, which will cause condensation and consequent drips inside of ager. This may be permanently eliminated only by repacking and refitting the doors. A temporary cure can be obtained by hanging curtains along inside walls of ager reaching from top rollers to within an inch of bottom rollers. These curtains will prevent cool air striking cloth or inside structure of ager and also absorb any condensed moisture on walls of ager.

5. *Collection of water in bearings.*—When roller bearings do not fit tightly or grease cups are not well packed, steam escaping through bearings will cause moisture to collect in grease cups. This condensed moisture will be squeezed through the bearing and the force so exerted will throw the greasy water onto the cloth. This can be prevented by packing small amount of waste into grease cups, along with grease, or by using above-mentioned curtains.

6. *Spatters from condensed moisture* on inside walls of ager.—Some agers are not equipped with heating coils on sides of agers. In this case, the sides of agers will be caused to sweat by cool air striking the outside walls. This can be satisfactorily eliminated, and at little cost, by using above-mentioned curtains.

7. *Moisture collecting in exhaust flue.*—This is caused by steam condensing as it comes in contact with cold surface of flue. This will not cause water spots, as the colors are developed when the fabric reaches the back of ager. But it may cause rust spots. This can be eliminated by placing a drain on the flue.

8. *Holes in steam chests of heated mouthpiece.*—This applies mainly to bottom-entry agers. Holes sometimes come in these heated chests and heating pipes. Operator can locate these holes by placing a drop-light inside of ager and then looking through the mouthpiece from the outside; if there are any holes, he will be able to see steam escaping from them or see water being blown out of them. There is but one remedy for this type of trouble; plug the holes.

9. *Water drips from ceiling outside ager.*—These are caused by exhaust steam coming in contact with cold ceiling. These drips, when they strike the unaged goods, cause bad water-spots. These drips may be prevented by blowing hot air on ceiling at point steam is striking.

10. *Windows open near ager.*—An open window near entry-end of ager may cool one edge of cloth. This cool edge comes in contact with the first hot roller inside the ager, causing this roller to sweat. This sweating roller will pick up loose particles of dirt and undeveloped color and these in turn will mark off and spot the goods. Windows near ager should be kept closed at all times.

ADVERTISING PAGES REMOVED

The Overseer's Corner

Countermanding Orders

"BILL, you look as though you were going to burst," Pete remarked as the two friends fell into step on the way out of the mill. "Are you thinking of that time you carelessly threw away a good cigar that someone had given you and forgot to smoke it down to the last half inch."

"Stop your fooling," Bill spluttered. "I won't mention any names, but I just happened to see one of our overseers do something that makes me boil. I was in his department at the time on another matter, or I wouldn't have believed it."

"Well, I certainly can't give you the benefit of my experience if you are going to be so mysterious," Pete put in. "Out with it!"

"This overseer," Bill growled, "had given one of his second hands general instructions about a job that was to be done. The second hand in turn passed on the instructions to the operatives affected. Naturally the overseer didn't give the second hand very detailed and minute orders and left some things up to the judgment of the latter. After all, you depend on your second hands or you would have to do everything yourself.

"Believe it or not," Bill continued, "when I came along, I found the overseer telling the second hand right in front of the operatives that he, the second hand, had not carried out instructions the right way.

"What's wrong with that ?" Pete asked. "Do you expect the overseer to have things go wrong and say nothing?"

"But its such an awful thing for an overseer to correct a second hand in front of the operatives," Bill came back. "The operatives get to think that the second hand doesn't know his business, the second hand feels that he has been treated like a child, and all-in-all it causes a lot of trouble in the organization. Corrections should be made privately."

"I think that you are unduly sensitive about such things," was Pete's comment. "No one expects the second hand to know as much as the overseer, and I see no reason why a man-to-man correction in front of the operatives or anyone else should be objectionable?"

"How would you like the super to show you up before your second and section hands?" Bill put in as a parting shot.

● ***Do you think that an overseer should correct his assistants in front of the operatives?***

Posting the Payroll

Editor, Overseers' Corner:

In a mill where the wage rate is sufficiently high to insure the operator a reasonable living wage, I believe the payroll should be posted. As Pete says, it indicates that the mill management is not ashamed of the wages it pays, and the posted payroll is a score-sheet on which all individual operatives strive to be first. Then, too, if the list is posted a few days before pay day, the operative knows how much he is going to get. If the posted figure and the amount he has figured he should receive do not agree, he has an opportunity to make his complaint known and have the matter straightened out before he receives his pay.

In a mill where the wage rate is so low that the operative must be a slave to eke out a bare existence, such a practice is not necessary, for the poor fellow is so busy trying to make a living that he has no time to read while in the plant. It is possible that Pete and Bill have never come in contact with the type of shop just mentioned, but let me assure them that they are legion and will remain so until the *silk* textile industry joins forces with the rayon weaving industry in a program of public-educational and production-restrictive tactics.

Well, Pete and Bill, here I am getting off the subject at hand and on to my pet peeve, which is too complex for short discussion. Nevertheless, I am glad to see you both back in TEXTILE WORLD. Accept my congratulations!

R. E. B.

Thank You!

Editor, Overseers' Corner:

My hat is off to you and your associates; the best news that I have heard lately is that those two likeable chaps, Bill and Pete, are back in the Overseers' Corner. I often wished for their return, but did not think it worth while to mention it.

So come on boys, start the fireworks, we will stand on the side lines and cheer, and may the best man win! I will be anxiously awaiting your argument each month.

R. W. C.

Passing the Buck

Editor, Overseers' Corner:

We all like a smooth-running mill, but in all mills there are times when something goes wrong. It is then that we find that in almost any mill one overseer will blame another, who in turn will blame the next, and so on down the line till it comes to the carder, who can't blame anyone else, but who will say that "the stock was faulty" or some such attempt at passing the buck.

Particularly between carders and

CONTRIBUTIONS ***to "The Overseers' Corner" are paid for without regard to length. We will use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.***

spinners there is a great deal of buck passing. When the weaver wants yarn and the spinner hasn't got it, he is sure to run to the super with his usual "no roving," or if the same gentleman is told that slugs are appearing in the cloth he is bound to say "bad roving."

It is too bad that the man who has the most work and the greatest variation in machines in cotton-yarn processing should also be the one blamed for all mistakes. I know that many troubles are due to faulty carding; but then again if it passes the spinner and appears in the cloth it should be a double mistake for the spinner, instead of coming back to the carder as it does in the buck-passing system.

I often wonder why the managements of more mills do not put one man in charge of both carding and spinning, with second hands in each room, and thus save themselves the energy of "carding out the carder" so often. Buck passing will go on unless we all recognize and acknowledge our mistakes.

R. S. R.

A Question on Oiling

Editor, Overseers' Corner:

As a reader of TEXTILE WORLD, and as a practical loomfixer, I wish to tell you how much I like to read the Overseers' Corner. There is also a question I would like to ask other readers:

Some loomfixers, when tying a new warp on a loom, put a few drops of oil in the proper places, while others allow the oil to run all over the loom parts. I have been wondering which costs the mill the most; too much oil or not enough? Too much oil means more oily cloth, which results in more seconds. Not enough oil results in wornout parts.

A. E. T.

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Overseers' Practical Helps

Changing Travelers

I derive many helpful hints by reading the Overseers' Corner, and I am breaking the ice with my first contribution to this valuable department of TEXTILE WORLD.

Changing travelers periodically I

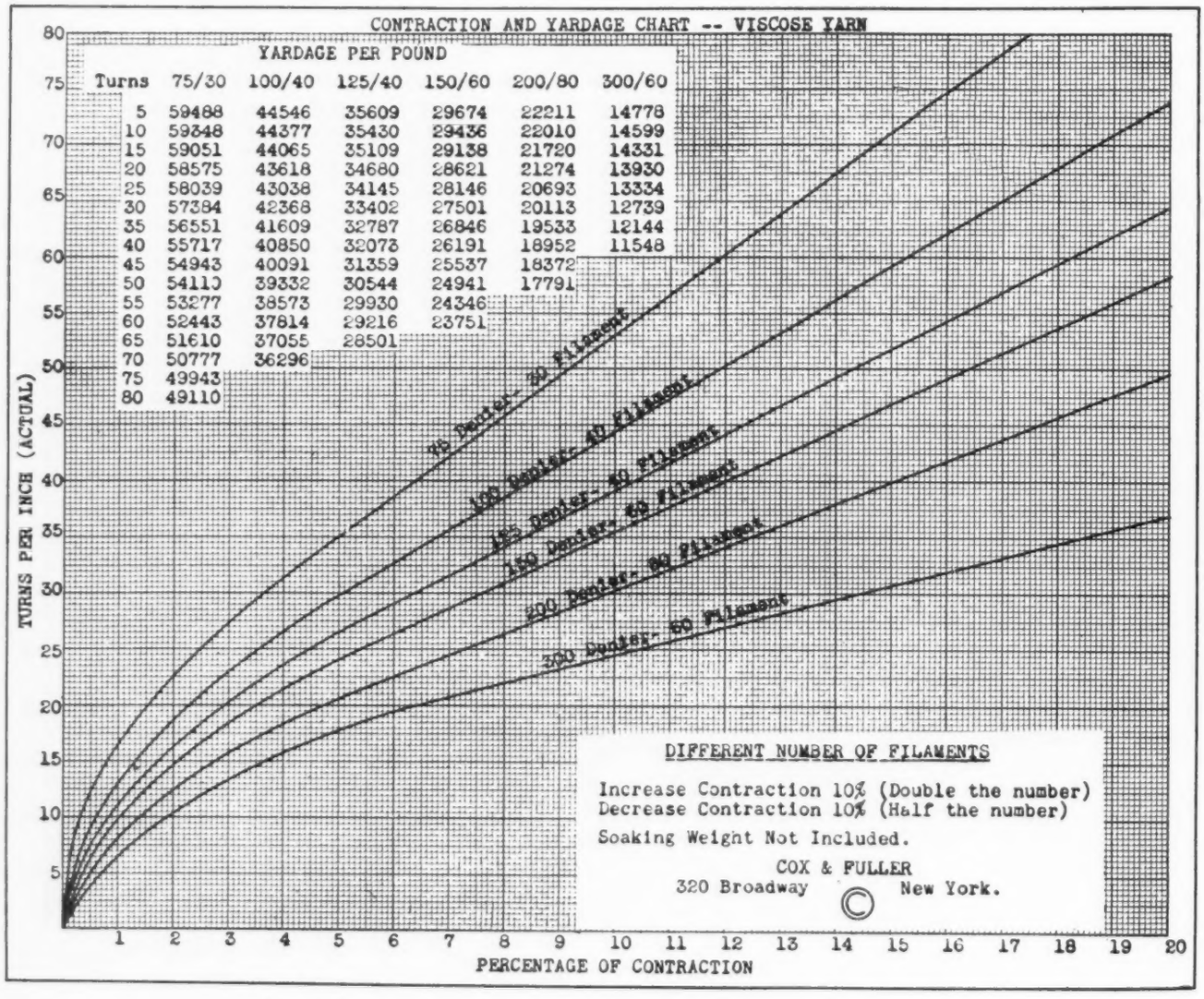

Chart giving percentage of contraction for various turns per inch as applied to six frequently used sizes of rayon yarn. The table gives yardage per pound.

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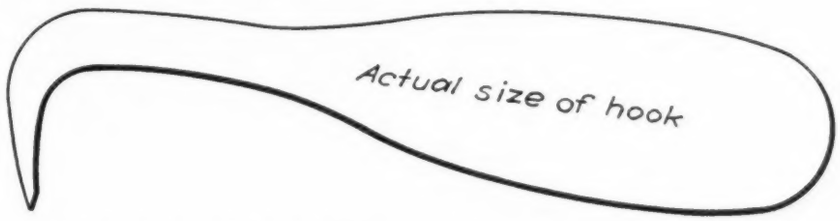
consider most helpful in obtaining good spinning, quality yarn, and ultimately good weaving. The length of time a traveler will run is determined by many factors, such as speed of the frame, conditions of the rings, whether warp or filling yarn is being spun, large or small rings, etc.



Traveler hook with which changers may change as many as 6,300 travelers per day per girl

I have traveler changers changing an average of 5,400 travelers per day for each girl. They break the old travelers off and put on new, start up the frames, and piece up any broken ends after changing. On very good spinning days, they have changed 6,300 travelers per girl. Has any other overseer any higher figures than these? The type of traveler hook shown in the illustration is used.

G. K.

Shuttles Flying Out

I read with interest Mr. Hays' article in the January issue on shuttles flying out. As a loomfixer of some years' experience, I have some points that I would like to mention. For the young fixer, I would suggest the following ten rules to remedy this trouble, which causes so much expense and loss of production in some mills:

1. Check oiling of all related parts. I have seen many looms where the box had an irregular motion that would have been remedied by proper oiling.

2. The box should be checked to make sure that it is level and the proper height with respect to the race plate.

3. The picker spindle should be checked to see that it is perfectly parallel with slide in box. It should never be bent except as an emergency measure on a rush job.

4. Picker should be in good condition and center on each shuttle.

5. An important point that is often overlooked by fixers is the shuttle binder, as they do not think that this has any bearing on shuttles flying out as long as the shuttles do not rebound. The binder should be bent to form the longest possible surface on the shuttles; i.e., it should be straight where it contacts the shuttle. By doing this, it is much easier on the entire picking motion, shuttles, and warp; and it will require less tension on the binder springs.

6. The pick must be easy on all drop-box looms, either 4 x 1 or 4 x 4. A harsh pick is a prolific cause of flying shuttles. Check lay arms for lost motion; use boxes that you can pull the shuttles out of with one finger; forget a strong, short sweep and use a mild, long sweep.

7. Reed and race plate alignment are often overlooked.

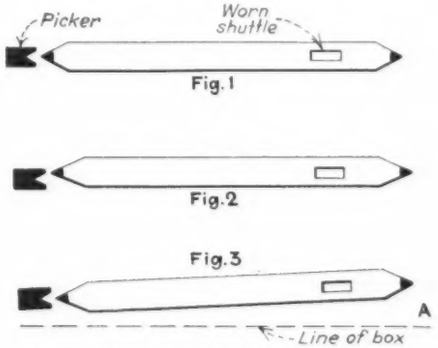
8. Lost motion in bevel gears or at any point between driveshaft and head motion is liable to cause shuttles to fly out.

9. Mr. Hays has already given the proper timing for eccentric gears, but lost motion in gears must be considered.

10. Shuttles are another important consideration in these days of high speed. When shuttles have been run for some time, some of them will get more wear than others, due to different patterns of work. The ones that get the most use will be worn thinner and lower than the others, and there may be as much as $\frac{1}{16}$-in. difference. The diagrams illustrate the point. In Fig. 1 the picker lines up with a worn shuttle, and Fig. 2 shows how the same picker lines up with a shuttle that has not been used as much. When the picker contacts the shuttle as shown in Fig. 2, the shuttle is raised at point *A*, as shown in Fig. 3, and is made fly out. It is a wise plan for the fixer to watch his looms and change the shuttles as best he can to give them equal wear.

If these points are remembered by the loomfixer, he will have no trouble with flying shuttles; and on automatic looms he will have much less trouble getting the shuttle to box correctly on the magazine end. A good fixer can save the company at least $5 a week and a poor one can lose much more.

OLNEY WILBUR



How misalignment with picker will make shuttle fly out.

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Take-Up in Weaving

Comparisons and experience are only guides to pre-determination of this variable quantity

By S. C. Veney

ONE of the most important factors in the determination of rayon or silk yarn requirements is the proper calculation of warp and filling take-up. However, no other factor is probably so uncertain as this item. A considerable number of causes can vary the take-up percentage so greatly that it is practically impossible to establish a definite and foolproof code which would assure uniform results at all times. The most reliable basis on which to work on such a matter is the old standby, experience.

The term "warp take-up" is understood to mean the loss of warp length caused by the interlacings of the warp yarns with the filling yarns. The firmer the binding or weave, the more take-up there will be. A satin weave, therefore, will not show so great a loss as a plain or taffeta weave. Again, of course, a high-pick satin may show more take-up than a low-pick taffeta. A decision in such cases depends entirely upon the experience of the mill and its operators.

Naturally the type of yarn used will also very materially change certain previously established figures which may

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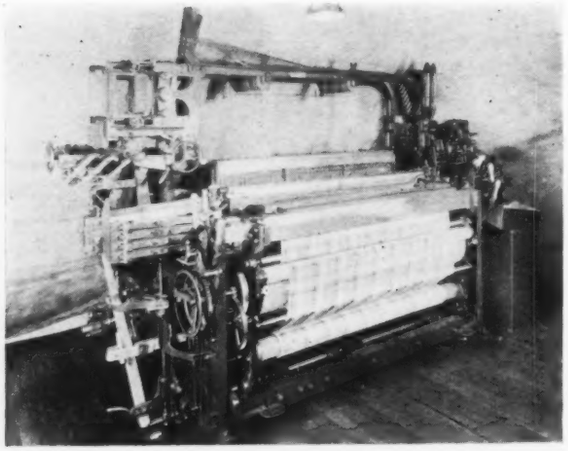

Calculating *take-up in weaving is vital in setting rayon or silk yarn requirements.*

have been based on other similar warps that consisted of a finer or coarser yarn. A coarse yarn will show a greater take-up than a finer yarn. This applies in both warp and filling. Again, hard-twist filling will also increase the warp take-up when compared with a cloth which has the same warp count and pickwheel but uses untwisted filling. This is due to the fact that a hard twist offers more resistance to the warp ends, forcing them to bend out more, while untwisted yarn is soft and permits the warp ends to bury themselves to a certain extent in the soft filling.

Gain in Slashing

In rayon weaving there is a certain slashing gain which can be deducted from the actual warp take-up figure. This varies with the type of yarn used. For instance, a viscose-process warp will show a greater slashing gain than an acetate-process warp. If, as a matter of illustration, a certain viscose construction shows a weaving take-up of 8% against a slashing gain of 6%, there really is a warp loss of only 2%. If the same take-up were experienced in an acetate warp where there is only a slashing gain of 3%, the loss in weaving naturally would be 5%.

A very important factor in controlling the take-up is the warp tension during weaving. The heavier the tension, the lower the take-up. Humidity also should not be overlooked, as much can be lost by improper control of atmospheric conditions.

With reference to filling take-up or loss of width, the biggest item is the correct timing of the loom. This concerns mainly the proportionate timing between beat-up of the reed and change of the harness. Should the reed beat up too soon (before the harness is even), the take-up will be greater than if the shafts are even when the reed touches the goods. For this reason, and for the sake of uniformity, many mills are timing their looms what is known as "dead front center." However, care must be taken in adjusting the picking motion accordingly, as otherwise the shed may be too late and have a tendency to trap the shuttle. This is particularly the case with looms using the new flat shuttles. Earlier timing of the pick, as well as higher shedding, is the only remedy where a square flat shuttle is employed. However, some of the newer flat shuttles with specially designed quills help to reduce the possibility of this trapping with practically no changing and excessive straining of the picking motion.

The Human Element

Another part that is very important is the human element, particularly in the case of a mill that has a foreman or overseer who checks and adjusts the warp tension by feeling the warp ends. As the warp weaves off, less and less tension is required and the sense of feel is a rather risky means of obtaining accurate results. Particularly in the case of multi-beam work, it is very difficult to have the tension adjusted all through a warp so that every piece is uniform and all the beams run out at the same time with the least possible amount of waste.

The average man's disposition on a Friday, when he looks forward to a pleasant weekend of rest and enjoyment, is different from what it is on a Monday morning. In the first case everything is fine, while at the beginning of the week nothing is right. Such a change of disposition is bound to reflect itself in his judgment and produce erratic results.

It is generally admitted that no foolproof rule can be set down to ascertain accurately the take-up percentage of a new construction. A comparison with similar goods previously woven and a long experience are the only reliable guides one can have. And too great an inaccuracy either way will result either in a shortage of yarn or a surplus, which, depending upon the size of the order, may run into hundreds of dollars.

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Personal News

W. C. Frazier, of Columbus, Ga., is now overseer of day weaving at Micolas Cotton Mills, Opp, Ala.

C. B. Armstrong, of Siluria, Ala., has accepted a position as overseer of the cloth room at Alabama Mills Co., Jasper, Ala., to succeed **J. M. Banks** who is now overseer of weaving at the same mill.

G. R. Davis is now overseer carding and spinning on the second shift at Cowikee Mills, Inc., Eufaula, Ala.

C. L. McMahon is now overseer of first-shift weaving at Jennings Cotton Mill, Lumberton, N. C. He was formerly associated with Shelby (N. C.) Cotton Mills and Cannon Mills Co., Kannapolis, N. C.

P. L. Piercy has accepted a position as overseer of spinning, spooling and warping on the second shift at Saxon Mills, Spartanburg, S. C. He was formerly second hand at Firestone Cotton Mills, Gastonia, N. C.

Sam Cole, formerly of Opp, Ala., is now assistant night superintendent of Cowikee Mill, Eufaula, Ala.

R. L. Stegall has resigned as master mechanic of Mexia (Tex.) Textile Mills. He is succeeded by **C. R. Lewis,** formerly master mechanic of Texas Textile Mills, Dallas, Texas.

F. P. Parkman, formerly with Gossett Mills, Anderson, S. C., is now overseer of No. 4 and No. 5 weaving at Springs Cotton Mills, Lancaster, S. C.

D. F. Dalton has resigned his position as overseer weaving at Echota Cotton Mills, Calhoun, Ga., to become superintendent of Winville Corp., Winder, Ga.

W. L. Francis, formerly with Drayton Mills, Spartanburg, S. C., is now overseer of spinning, spooling, and winding on the second shift at Watts Mill, Laurens, S. C.

P. A. Calvert is now overseer spinning at Entwistle Mfg. Co. No. 2, Rockingham, N. C., as well as boss carder.

Sam T. Snoddy, overseer of weaving at Entwistle Mfg. Co. No. 2, Rocking-

ham, N. C., has been given the additional duties of assistant superintendent.

Arthur L. Burnet is now assistant superintendent of Ware Shoals (S. C.) Mfg. Co. He was formerly with Faytex Mills, Inc., Fayetteville, N. C.

Claude W. Evans has been promoted to the position of assistant superintendent of weaving at Gluck Mills, Anderson, S. C., replacing **J. V. Clavert,** who was moved up to the position of superintendent of weaving to fill the vacancy caused by the resignation of **A. Y. Hughes.**

M. V. Guest, formerly loomfixer at No. 1 mill of Jefferson (Ga.) Cotton Mills, has been promoted to night overseer of weaving at No. 2 mill of the same company at Crawford, Ga.

G. Adolph Thorell, Jr., has been placed in charge of finishing at Pontiac (R. I.) Finishing Plant.

George A. Foye is now in charge of dyeing at Newark (N. J.) Textile Dyeing & Finishing Co.

William G. Dunning is now overseer of dyeing at S. Blumenthal & Co., Shelton, Conn.

Howard Haynes has been appointed overseer of the new rayon department at the Hoosick Falls (N. Y.) Undergarment Co.

F. V. Adams is now overseer of finishing for Eastland Mills, Corinna, Me.

John Semanik is in charge of finishing for Faith Mills, Averill Park, N. Y.

P. L. Jackson is now overseer of finishing at Columbiaville (Mich.) Woolen Mills.

Harry E. New, Clemson textile graduate of 1935, has been transferred from

Fred **Still,** *president of S.T.A., who will preside at meeting in Greenville on April 9.*

Burlington Mills, High Point, N. C., to Gloria Rayon Mills, Johnson City, Tenn.

Karl Frederick has been appointed maintenance supervisor of E. I. du Pont de Nemours Co., Rayon Division, Old Hickory, Tenn. **J. P. Hughes** has been appointed supervisor of packing and shipping, in addition to his inspection duties.

W. N. Pharr, of Concord, N. C., has become assistant to the general manager of Roanoke Mills Co., Roanoke Rapids, N. C.

H. H. Spray is now overseer of carding at the Jefferson, Ga., Mills.

W. M. Groom is now in charge of the filtering plant of Fort Mill, S. C., plant of Springs Cotton Mills.

George Lodge is now overseer of finishing at Troy Blanket Mills, Troy, N. H.

The Overseer's Corner

Overseers and office force of A. M. Smyre Mfg. Co., Gastonia, N. C. *First shift, left to right, front row: J. P. Dagenhart, overseer of carding, Miss Lucile Clark, office clerk, Mrs. Ben Lanhardt, shipping clerk, E. L. Van Pelt, master mechanic; second row, N. W. Holland, overseer of carding No. 2 Mill, Marshall Dilling, secretary and superintendent, G. A. Lay, overseer of spinning No. 2 Mill, D. A. Myers, overseer of spinning No. 1 Mill. Mr. Dilling is a former president of the Southern Textile Association.*

P. R. Walshaw is now in charge of dyeing for Farnsworth Co., Lisbon Centre, Me.

F. H. Brophy has been made overseer of dyeing at the Milford Rug Mills, Laurel, Del.

Jesse M. Jones, formerly with W. A. Handley Mfg. Co., Roanoke, Ala., has been appointed assistant superintendent of John P. King Mfg., Augusta, Ga.

David A. Purcell has resigned as superintendent of Aiken Mills, Bath, S. C., to become assistant superintendent of manufacturing for Eagle & Phenix Mills, Columbus, Ga.

John P. Ryan has been named overseer of finishing at Hudson River Woolen Mills, Newburgh, N. Y.

A. K. Ball, Clemson textile graduate of 1935, has been transferred from Burlington (N. C.) Mills, to Roanoke (Va.) Weaving Mills.

I. B. Williams is now night overseer of spinning at Jefferson Mills No. 2, Crawford, Ga.

Claude T. Kay, formerly of Joanna Cotton Mills, Goldville, S. C., is now overseer of weaving at Pelzer (S. C.) Mfg. Co.

S. R. Lindsay, formerly overseer of weaving at Union division of Consolidated Textile Corp., La Fayette, Ga., is now overseer of the weave room of Monroe (Ga.) Cotton Mills.

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Questions & Answers

Oil Spots on Cotton Serge

Technical Editor:

We are inclosing samples of finished cotton French-back serge, on which you will note some oil spots. These do not show up in the gray goods, but only in the finished fabric. We shall appreciate your opinion as to the cause of this defect. (8383)

Examination of this fabric leads us to believe that the fatty matter or the softener used in finishing the goods separated in the finishing bath and caused a scum or oil globules to rise to the surface of the bath. This scum got on the cloth, forming a spot. Drying of the goods on cans caused the spot to spread, and the subsequent calendering caused it to spread still further.

In addition to the oil stains, we note another serious defect in the cloth. That is, the finish on the twill side is not scratch-proof. If you will run your finger nail over a sample of the fabric, you will find that it produces a decided mark or streak in the goods. We attribute this to the use of the wrong type of starch or binder.

Splicing 8/8s Cotton Yarn

Technical Editor:

I have run into some difficulty in the spinning and winding of 8/8s cotton yarn, knitting twist. The knot made of 8/8s is too heavy for my knitting machine. Therefore, I am trying to splice the 8/8s at different intervals.

I am able to put up 14 oz. on a spool, and in rewinding this in order to make 5- or 6-lb. cones, without a knot in one place, I try to splice it at different intervals and find that the yarn breaks.

I understand that this is done on a warp twist and put on 5-lb. packages, either spools or cones, for the tire industry.

I shall appreciate any information you can give me. (8346)

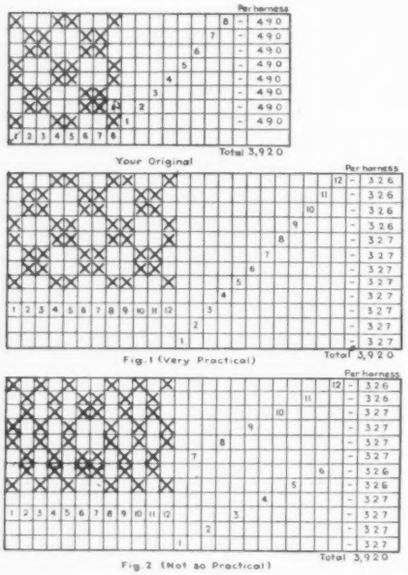
We suggest that you wind your 8s singles on tubes and then double it in multiples of four. You can stagger your knots on the doubler, having them 1 to 2 in. apart. It is difficult to splice single yarn, and probably the best you do is to splice in multiples of two, instead of using the

single. Be sure to have your splices as far apart as possible.

Split Basket Weave

With reference to your January, 1937, issue, in the Overseer's Corner, page 114, concerning "split basket weave" (8387), I agree with your answer to the problem, but I should like to offer a further suggestion.

I propose you draw it in on 12 harness straight instead of 8 harness straight. This prevents the warp from crowding during weaving, as there are only 327 ends per



harness instead of 490 ends per harness (Fig. 1). Fig. 2 could also be tried. By using the fancy draw, each thread should, theoretically, be more rigidly controlled.

Bob McKinstry

Equipment for Spinning Worsted Knitting Yarn

Technical Editor:

Kindly let me know what machinery is required to make the inclosed sample of knitting yarn from the raw wool to a finished product in 2-oz. packages and 4-oz. skeins. We want only the details for a small mill, but also where expansion can be easily had.

Would it be better to buy wool in the top and make a worsted yarn, or to use noils and waste with a percentage of new wool? Any further information you can supply will be appreciated. (8396)

The sample submitted is a 4/8s fingering yarn, 56s quality, approximately 6½-in. maximum staple; and it appears to have been spun from dyed top.

The question is not complete. No mention is made of the minimum or maximum production required. To duplicate the sample, a worsted yarn will have to be made, using 100% staple top. Worsted yarns are being made from a blend of noils, garnetted waste, and virgin wool; but such a yarn would not duplicate the sample, and special machinery is required to process such blends.

For a small mill, sorting, scouring, and combing would prove expensive. It is more economical to buy top. One train of scouring bowls, 48-in. width, could scour from 1,400 to 1,700 lb. per hr. of grease wool. Such a train would yield 30,000 lb. of clean wool in a 48-hr. week, with a probable production of 26,000 to 27,000 lb. of top in the same time. This amount of top would require from four to six sets of open drawing, the exact number of sets being dependent upon the drawing layout and the type of machine used on the fine end.

If top is bought, there arises the question of dyeing and recombing. For 56s and lower, some small mills do not recomb. We advise commission dyeing of the tops, thus simplifying the problem to the drawing, spinning, and twisting of dyed tops.

Five or six operations of drawing would be ample to produce a roving suitable for spinning 1/8s. We give below details of a drawing and spinning layout to produce 4,000 to 4,500 lb. of 16-dram roving per 48 hr.; to spin 1/8s, twisted to 4/8s:

1 Double-head can gill box
1 2-spindle gill box
1 4-spindle drawing box
1 6-spindle weigh box
2 8-spindle finishers
2 28-spindle rovers
3 176-spindle flyer spinning frames
2 80-spindle flyer twisters
3 40-spindle power reels

Ball winders for making the 2-oz. packages will have to be purchased as required.

The above layout of machines is only approximate. Modifications may be necessary according to sizes of package, speeds of flyer possible, and turns per inch required, not forgetting the efficiencies possible where doffers or automatic doffers are used.

Spun-Rayon Velvet

Technical Editor:

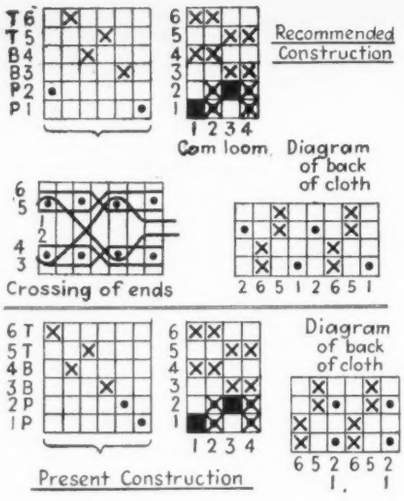
Among our products is a velvet for upholstery, the pile of which consists of cotton-spun rayon. It is an attractive fabric, but the objection which we run up against from time to time is that it marks and mats.

We are anxious to eliminate the marking and shall appreciate it if you will inform us of a cure for this defect. A small cutting of the cloth in question is inclosed. (8367)

Care must be taken in making the pile warp. Two ends should be run in one reed dent, and these ends should be parted by a rod during the beaming. If a warping machine is used, the section reed should contain only one end in a dent. The cloth would be better made by the construction illustrated, in which the reed dent separates all the pile ends and they do not chafe so much in passing from top to bottom. This will prevent buttoning of the pile yarn and will eliminate the marks caused by the shrinkage in width during the weaving.

A W-weave would of course hold the pile more firmly and would resist crushing to a greater extent than the V-weave.

The yarn is all dyed before weaving, and after the weaving the fabric should


Recommended Construction
Com loom. Diagram of back of cloth
Crossing of ends
2 6 5 1 2 6 5 1
Present Construction
Diagram of back of cloth
6 5 2 6 5 2
1 1

be washed out in lukewarm water with a suitable oil, such as Turkey-red, to give luster. If the fabric is boiled hard with soap, the pile is likely to mat badly. The cloth is dried, brushed, and sheared—and then, immediately, should be placed on a board for shipment. This board should have an iron clamp on each end, each containing two rows of hooks for holding the selvage of the cloth. This eliminates danger of the pile being disturbed, as it would be if the piece were rolled or folded in layers.

The two-ply flake yarn in the filling will cause trouble if it is not accurately laid in the cloth.

Finishing Silk Thread

Technical Editor:

We are inclosing a sample of pure-dye silk thread used by the neckwear trade. This is the finish we should like to duplicate. At present we are using paraffin wax; but the results are not satisfactory, as the silk has a dull, cotton-like appearance, rather than the lustrous appearance wanted. Can you tell us what type of wax we should use and how it should be applied? (8346)

In order to obtain the desired finish the thread should be run over a dresser at a high speed. A single-brush dresser would be best, touching the thread lightly on the take-up side of the brushes. For a 50-gal. batch of size, use 20 lb. of potato starch, 1 lb. paraffin wax, and ½ lb. of tallow softener. Thin with water in the size box if the mixture is too stiff.

Defect in Finishing Hosiery

Technical Editor:

We are inclosing herewith two pairs of hosiery which have not finished properly. We shall appreciate your comments as to our difficulty in the finishing of this hosiery. (8399)

In our opinion the samples submitted have a good body and hand. The most serious defect is the mottled appearance caused by shiners in the goods. Apparently you have used a duller in your finishing bath and this has gone on unevenly. This can be due to any one of several causes, the principal ones being overloading of the dye nets or overloading of the dyeing machine. We suggest, therefore, that you first check these points.

If overloading of the nets or the machines is not the cause of the defect, we advise you to ask the chemical manufac-

turer from which you are getting your finishing compounds to send one of its demonstrators to your plant to work out a formula which will meet the particular conditions in your mill. About the only other thing possible is for you to experiment yourself with various products, concentrations, and temperatures of application, etc., until you hit on a procedure which gives satisfactory results. That is, your problem appears to be a local one, which must be worked out to suit local conditions.

• • •

Getting the mill in balance on

Print Cloth

By Gilbert R. Merrill
Lowell Textile Institute

IN THIS, the eleventh article on cotton-mill organizations, Professor Merrill gives the first part of the calculations necessary for balancing a mill on print cloth and arrives at the division of spindles between warp and filling. Other calculations on which the accompanying table is based will be given in detail in the next issue.

THIS print-cloth mill is taken as an illustration of a complete layout to produce gray cloth. As this type of fabric is produced in enormous quantities, and as the counts involved are medium to fine, it is about as typical of the entire industry as any single organization can be.

The problem is one of balancing the equipment of a 50,000-spindle unit. In order to lay the necessary groundwork of detail, the first portion of the calculations considers the cloth and the layout for the warp in warping and slashing. This work is necessary as a means of finding the ends per beam, a figure which must be known in determining the production of these operations.

The details are worked out on the assumption that the cloth is 38½ in., 64x60, 5.35-yd., gray goods; that the warp count is 30s and the filling count is 36s; that 50 yd. is the desired length of cut for the gray goods; that a loom beam will hold about 150 lb. of warp yarn; that an average slashing gives 6% size; that a section beam will hold in the vicinity of 400 ends and a weight of about 420 lb.; and that the take-up in the cloth is 6% for the warp and 5% for the filling.

Body ends warp 38 × 64 =	2,432
Selvage ends	40
Total warp ends	2,472

50-yd. cut with 6% take-up gives:
50 ÷ 0.94 = 53.2 yd. warp per cut.

With 150 lb. on a loom beam, including 6% slasher size:

$$\frac{0.94 \times 150 \times 30 \times 840}{2{,}472} = 1{,}437.4 \text{ yd. possible}$$

on loom beam. 1,437.4 ÷ 53.2 = 27.02 cuts.

An even 27 cuts per loom beam gives 1,436.4 yd.

Six section beams of 412 ends each are required for 2,472 ends. One or two ends may be added to take care of breakage, but these will be neglected here. If a section beam holds 420 lb., with 412 ends, the yardage will be:

$$\frac{420 \times 30 \times 840}{412} = 25{,}500 \text{ yd.}$$

$$\frac{25{,}500}{1{,}436.4} = 17.78 \text{ loom beams per section beam.}$$

Using an even 17 loom beams gives:
17 × 1,436.4 = 24,418.8 yd. per section beam.

To determine the division of the 50,000 spinning spindles in the correct proportion to produce the proper quantities of warp and filling, it is necessary to determine the proportion of warp and filling in the cloth and to make allowance for the losses from spinning through weaving. Then, these figures used with the pounds produced per spindle will give the percentages of warp and of filling spindles.

Weight of yarn in one yard of cloth.
Warp, 6% take-up.

$$\frac{2{,}472 \times 36}{0.94 \times 36 \times 30 \times 840} = 0.1044 \text{ lb. warp.}$$

Filling, 5% take-up

$$\frac{60 \times 38\frac{1}{2} \times 36}{0.95 \times 36 \times 36 \times 840} = 0.0804 \text{ lb. filling}$$

Total 0.1848 lb. per yd.

To make allowance for the losses after spinning, the following waste percentages have been assumed: warp—winding 1%, warping 0.5%, slashing 1%, weaving 0.5%; and filling—weaving 1%.

Weight of yarn to be spun for one yard of cloth.

$$\text{Warp } \frac{0.1044}{0.99 \times 0.995 \times 0.99 \times 0.995} = 0.1076 \text{ lb. warp.}$$

$$\text{Filling } \frac{0.0804}{0.99} = 0.0812 \text{ filling}$$

Division of warp and filling spindles.
Warp production = 0.22 lb. per spindle per 10 hr.
Filling production = 0.21 lb. per spindle per 10 hr.

Notice that while the filling twist is lower than the warp twist, the lower spindle speed and finer counts offset the higher front-roll speed in such a way that the production of 36s filling is almost equal to the production of 30s warp.

Spindles for one yard of cloth.

Warp	0.1076 ÷ .22 =	0.489 warp spindles
Filling	0.0804 ÷ .21 =	0.383 filling spindles
		0.872 total.

$$\text{Per cent warp spindles } \frac{0.489}{0.872} = 56.1\% \times 50{,}000 = 28{,}050$$

$$\text{Per cent filling spindles } \frac{0.383}{0.872} = 43.9\% \times 50{,}000 = 21{,}950$$

MACHINERY FOR 30s Warp & 36s Filling SIZE OF MILL 50,000 Spindles Print Cloth

OPERATION		SIZE	WASTE	TOTAL LB.	LB. PER UNIT	UNITS	SPEED	MACHINES	DETAILS	LENGTH	WIDTH
Raw Stock		–		13,538							
Bale Breaker		–	5.0	12,861	15,000	1	–	1	24 ft. apron	35'-8"	6'-9⅜"
Buckley		–	1.0	12,726	15,000	1	–	1	—	9'-10¾"	6'-5¾"
Vertical		–	2.0	12,455	15,000	1	–	1	—	10'-11"	5'-7"
Horizontal		–	0.5	12,387	15,000	1	–	1	—	10'-6"	7'-6"
Picker		12 oz.	1.5	12,184	3,080	3.96	968	4	3 Beaters	49'-0"	6'-8"
Card		50 gr.	6.0	11,453	109	105.1	10.0	106	—	10'-6"	5'-5¼"
1 Drawing		50	0.5	11,396	124	91.9	300	4-4-6	1⅛" Mst.	40'-3"	5'-11"
2 Drawing		50	0.5	11,339	124	91.5	300	4-4-6	1⅛" Mst.	40'-3"	5'-11"
Slubber		0.70 HK	1.0	11,225	15.78	712	650	10-72	12 × 6	33'-3"	6'-10"
Inter	Warp	1.80	1.0	6,361	5.70	1,116	950	11-108	9 × 4½	34'-9"	3'-6½"
	Filling	2.00	1.0	4,752	4.94	968	950	9-108	9 × 4½	34'-9"	3'-6½"
Fine	Warp	5.60	1.0	6,297	1.36	4,630	1,150	31-152	7 × 3½	36'-6"	3'-4"
	Filling	6.70	1.0	4,704	1.06	4,440	1,150	29-152	7 × 3½	36'-6"	3'-4"
Spinning	Warp	30	2.0	6,171	0.22	28,050	9,525	111-240	3½" gg. 1¾" Rg.	37'-6"	3'-3"
	Filling	36	2.0	4,610	0.21	21,950	8,175	81-272	3" gg. 1⅜" Rg.	36'-6"	3'-3"
Winding	Warp	30	1.0	6,109	13.39	456	750 yd.	5-100	No. 40	44'-4"	4'-3"
Warping	Warp	30	0.5	6,077	2,550	2.38	400 yd.	3	420 ends	41'-9"	10'-5"
Slashing	Warp	30	1.0	6,016	1,763	3.42	–	4	2472 "	43'-8"	8'-0"
Weaving	Warp	30-36	0.5	5,946					2472 "	7'-10⅜"	4'-4"
	Filling		1.0	4,564		48 yd.	1,195	192 picks	1,195		
				10,550 total (no size)							

...Free... For the Asking

READERS interested in the catalogs and other useful literature reviewed on this page, may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York.

Humidification. C. J. Tagliabue Mfg. Co. 16-page catalog describes company's complete line of extreme precision and standard grade thermometers and hydrometers; also certified hydrometers and A.S.T.M. thermometers.

Meters. Brown Instrument Co. 56-page staple-bound illustrated catalog covers company's complete line of flow meters, explaining application and general use; also describes non-technical operation of flow meters and construction of orifice plate.

Power Units. Fairbanks, Morse & Co. 15-page illustrated bulletin, 3600-A1 describes construction and application of model 36 Diesel power units, with representative installations.

Speed Control. New Departure Division General Motors Corp. Folder describes construction, applications and advantages of company's variable-speed Transitorq, listing 16 specific features some of which are also shown in illustrations.

Belts. Mechanical Goods Division, U. S. Rubber Products Inc. "Album of Familiar Belts," new folder, contains 25 photographs showing unusual installations of transmission belts in various industries; also a number of studies by Margaret Bourke-White, noted industrial art photographer, comprising photographic tour of belt factory.

Linestarters. Westinghouse Electric Mfg. Co. Two illustrated leaflets describing with ratings, application and distinctive features company's line of (a) combination linestarters and (b) non-reversing linestarters.

Circuit Breakers. General Electric Co. 8-page illustrated folder gives detailed description of type AF-1 circuit breakers for office buildings and industrials, including tables and charts on applications and time-current characteristics; also dimensions.

Spindle Tapes. Clipper Belt Lacer Co. Two illustrated folders give characteristics, uses and prices of (a) spindle tape lacing, and (b) condenser tape lacing, equipment, citing economies possible by their use.

Ventilation. Bendix Products Corp. 16-page staple-bound illustrated catalog on company's line of ventilating units with detailed specifications and uses for propeller fan blades and "Mobile" floor level aerospots; also

chapter of general facts about ventilation.

Belting. L. H. Gilmer Co. 36-page staple-bound handbook of V-belt information, listing standard sizes and prices for multiple belt and fractional horsepower use; also tables of standard drives for various ratios, and engineering data for designing special drives.

Sizing Rayon Warps. Charles P. Johnson. Folder describes company's 7-cylinder combination silk and cotton system rayon-warp sizer, emphasizing adaptability of equipment by minor changes to either silk or cotton system sizing; also lists 18 special features and advantages.

Non-Corrosive Metals. International Nickel Co. 48-page, staple-bound, illustrated volume covering hydroelectric plants, steam generation, steam turbines, steam lines, condensing and cooling, transmission lines, regulators and meters, pipe lines, highways, pumps, sewage disposal, refrigeration and freezing, etc., together with a 4-page chapter of technical facts and data and a brief chapter on mill forms.

Photo-Electric Cells. Pfaltz & Bauer, Inc. 44-page staple-bound booklet giving comprehensive details on company's line of photo-electric cells and apparatus describing construction and method of operation and including data on photo-electric colorimeter assembly and connections and accessories, also reflection, transparency and blackening, and gloss meters, galvanometer and slit ocular.

Lubrication. Alemite Division, Stewart-Warner Corp. 1937 industrial catalog, "Alemite Controlled Lubrication," comprises 56 pages of data on entire range of Alemite industrial equipment; with numerous illustrations in color showing equipment in various types of industries.

Credit. American Credit Indemnity Co. 36-page booklet describes company's recent collection letter contest, and includes 30 "best" letters, among which are collection letters used by Allen-A Co., Bay State Thread Works, Chipman-Holton Knitting Co., Ltd., Oakbrook Hosiery Mills and Trojan Hosiery Mills.

Mixers. Mixing Equipment Co., Inc. 24-page, staple-bound, illustrated booklet "Lightnin" covering portable mixers, patented mixing method, laboratory models, models C, S, M and D portable mixers, propeller combinations, special equipment, etc.

Welders. Lincoln Electric Co. Four-page folder tells how dual continuous control gives any type of arc for each value of welding current.

Hoists. Harnischfeger Corp. Illustrated bulletin H-5 describes added advantages in handling "off-the-floor," with analyses of general and specific industrial handling problems; also contains diagrams which explain simplified construction and operation.

Conveyors. Standard Conveyor Co. Booklet describes company's line of piler conveyors and combination piler conveyors, featuring economies effected by their use.

Miscellaneous. Recent issues of manufacturers' publications containing items having a textile slant are as follows: *Houghton Line* has articles on sizing problems and on various aspects of lubrication; air conditioning in textile mills with particular reference to carding, drawing, roving and spinning are discussed in *Parks' Parables;* use of nickel alloys in Rapidogen print agers used in printing cotton fabrics is considered from various technical aspects in *Nickelsworth; Link-Belt News* has article telling how use of P.I.V. gear on Saco-Lowell rayon slasher coordinates speed of equalizing roll and speed of drag roll; a timely article on methods of attaching elastic to undergarments, by T. M. Murphy, and an illustrated story on better finishing on knee-length hosiery, feature Union Special Machine Co.'s *Needle's Eye; Termaco Times* discusses "why mills use Denman fabric loop pickers," also describes recent addition to company's bobbin and spool plant.

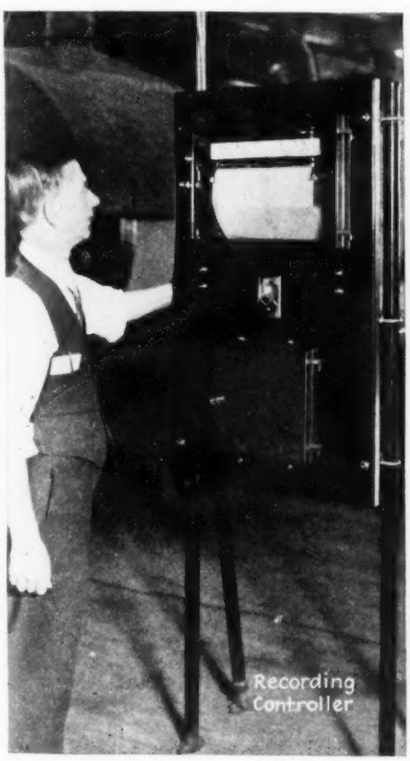
New Machinery and Processes

Moisture-Control Device Applied to Cotton Slashing

By Richard P. Hawkins
Brown Instrument Co.

• Accurate control of the moisture content of the sized yarn as it leaves the machine is made possible with the Moist-O-Graph, a new type of recording and controlling instrument for installation on cotton slashers, developed by Brown Instrument Co., Philadelphia. The Moist-O-Graph equipment consists of the following principal units, excluding the control mechanisms: (1) a calibrated wide-strip chart recorder, (2) a power unit, and (3) a detecting roll supported by an insulated bracket. With the moisture-control equipment applied to a cotton slasher, one or more of the following benefits are secured:

1. A flexible yarn for weaving.
2. Elimination of over-drying causing: (a) damaged fibers; (b) breakage in loom; (c) chafing in loom due to flaking of brittle size; (d) deterioration of sizing compounds.
3. Elimination of under-drying causing mildew.
4. A uniform quality yarn.
5. Increased production from the slasher.
6. Saving in steam consumption.
7. Lower humidities can be maintained in the weave rooms when warps are never over-dried.
8. The operator will be able to devote more time to the important details of slashing.



In the development of the Moist-O-Graph, it was found that the following factors influence the final moisture in the yarn: (1) condition of the yarn supplied to the slasher, (2) speed of operation determines the time allowed for penetration of the size and the drying of the yarn, (3) viscosity and temperature of the size solution, (4) pressure exerted by the squeeze roll, (5) condition of the jacket of the squeeze roll, (6) humiditv and draft conditions in the slasher room, (7) tension of the yarn governs the pressure against the drying cylinder, (8) steam pressure in the cylinders or the surface temperature of the cylinders, (9) removal of the condensate from the cylinders, (10) roundness of the drying cylinders, (11) general mechanical condition of the machine, and (2) alertness of the operator in handling the machine.

One, familiar with the operation of a slasher, will acknowledge that some and, perhaps many of these factors, do have some effect on the moisture in the yarn. If this is so, it is then hard to realize how a uniform moisture content in the yarn can be secured by any control system measuring one of the following relative values, when the effect of all the variable factors is never a constant value: (1) temperature of the steam entering the drying cylinder, (2) steam pressure in the drying cylinders, (3) temperature of the condensate in or leaving the drying cylinders, (4) surface temperature of the drying cylinders, (5) temperature of the air near the drying cylinder, (6) wet-bulb temperature of the air which has been passed over or through the product, (7) wet- and dry-bulb temperatures of a hot-air dryer, or (8) dry-bulb temperature of the product.

Ordinarily, the moisture content is determined by the analytical method, requiring extreme care in sampling and weighing. Results are obtained only after heating the sample in an oven at 230° F. for several hours. An accuracy of less than 0.5% regain can only be secured by taking the average of many samples. With this procedure to follow, it is questionable just how many mills have analyzed the effect which various factors have on the final moisture content of the yarn.

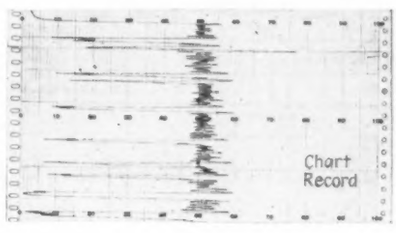
For determination of moisture, the Moist-O-Graph offers the following advantages, when compared to the analytical method:

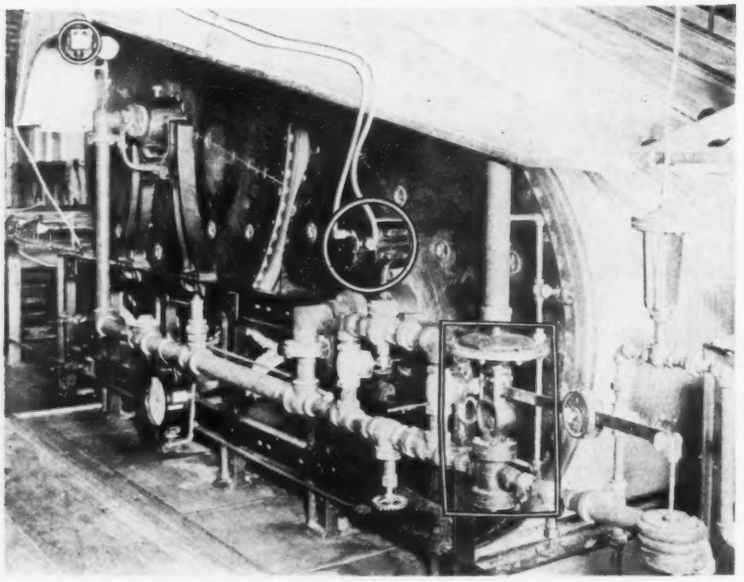
1. Has 4 to 10% calibrated scale for cotton regain.
2. Records instantly change in percent regain.
3. The product is not damaged (sampling requires securing a small piece of the material.

The detecting-roll unit of the Moist-O-Graph is mounted on the rest bar at the delivery end of the slasher. The roll rests on the yarn as it passes over the back press roll of the draw-off unit. The moisture content is determined by an electrical resistance measurement. The back press roll is the grounded side of the circuit. The equipment is not affected by dust, vibration, and excessive humidities commonly found in many mills. Furthermore, deterioration of the tubes and changes in line voltage have no effect on the calibration of the instrument.

The Moist-O-Graph recorder is suited for air or electric control systems. With a sensitive moisture measuring device in direct contact with the yarn, it is possible accurately to control the final moisture content of the yarn by regulating the steam supply or speed. Best results have been secured by installing a reducing valve in the line on the high side of the steam-control valve. The drying requirements change considerably with each set, due to the size of yarn and the number of ends. The capacity of the control valve is balanced for the approximate drying requirements by changing the setting of the reducing valve. The chart record indicates the moisture and operating conditions. A chart with regular dry-yarn cycles indicates perfect operation of the slasher. The recording of the dry yarn occurs when the slasher is stopped to change the beam of yarn. Irregular dry-yarn cycles indicate that trouble has occurred, due to poor size, defective yarn, or improper adjustments on the slasher.

Before recommending the Moist-O-Graph recording controller for installation on slashers sizing cotton warps, the manufacturers made many investigations in the laboratory and in the mill. The calibration of the instrument for cotton warp yarns is based on the knowledge of the





SLASHER CONTROL

effect, if any, of thickness, temperature, and speed of the yarn; area and pressure of contact; number threads per inch; sizing compounds and mineral salts in the water. The cumulative effect of these variables in slashing will never be greater than ± 0.75%.

Many slashers have the steam supply and condensate discharge on opposite sides. Field tests on this type of slasher proved that the yarn from the steam supply side had consistently 0.5% less moisture than the yarn tested from the condensate discharge side. Additional moisture tests were made on several manually controlled slashers equipped with reducing valves to regulate the drying requirements. The tendency was to over-dry the yarn and, furthermore, on a repeat run of the same set several days later, there would be a noticeable difference in percent regain.

The importance of controlling the temperature of the cooking and storage kettles and the temperature and level of the size box cannot be over-emphasized. The viscosity in the size box influences the drying requirements and the percentage of size deposited on the yarn. A sizing formula is selected to give the desired penetrating and coating qualities, based upon a constant immersion and squeeze roll condition. A change in speed will change the results produced by the immersion and squeeze rolls. If all conditions in the size box remain constant and the speed of the slasher is increased, it is found that the percentage of size deposited on the yarn becomes greater. The Moist-O-Graph is, therefore, recommended for the control of the steam supply in preference to regulating the speed of the slasher.

Tenter Dryer

• The Hurricane high-speed tenter dryer manufactured by Philadelphia Drying Machinery Co., 3351 Stokley St., Philadelphia, Pa., features air-through circulation, double-insulated housings, and finger-tip control.

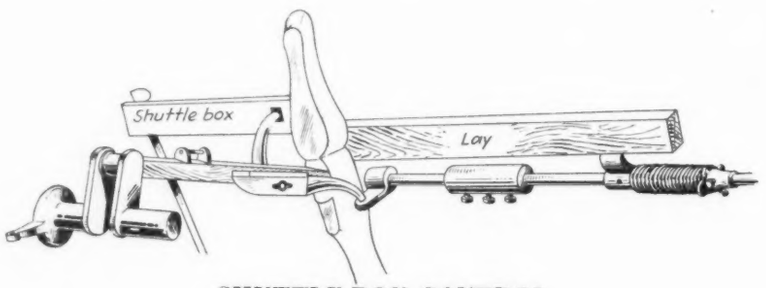
According to the company, the system of air-through circulation increases the rate of drying, improves the quality of the finished fabric, and dries evenly. The uniformity of drying is said to be even from side to side and from end to end of a piece; even the seams, where two pieces are sewed together, dry rapidly. A large volume of air under pressure is depended on more than heat for the drying. This system approaches atmospheric air drying.

Construction of the new machine emphasizes strength, convenience, efficiency, and appearance. A margin of safety is provided for in the structural steel construction. Panels are removable and doors are provided at frequent intervals to give easy access to the inside of the machine. Panels are thoroughly insulated, fit against insulating cushion seals, thus eliminating a metal-to-metal contact with its attendant heat loss.

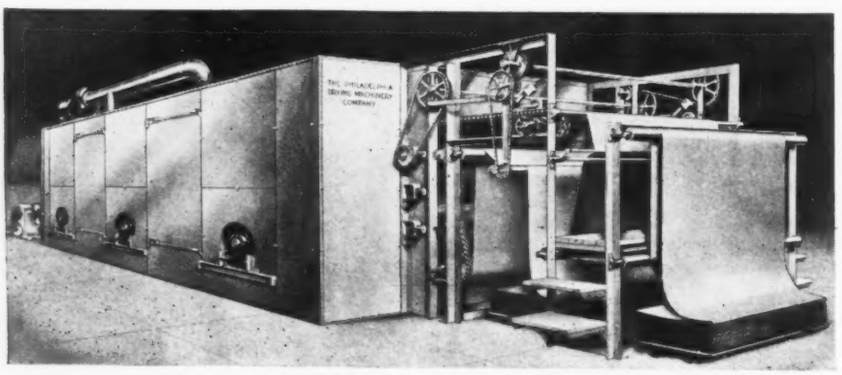
Fan motors are placed in insulated recesses within the frame-line of the dryer. The walls are flush, and there is an absence of projecting parts which might be in the way. The door hardware and other fittings are heavy.

Finger-tip control makes it possible for the operator of the machine to control all procedures from his platform. The machine starts or stops by pushing a button. Speed is regulated through a variable-speed drive, and a tachometer enables the operator to observe the speed of the fabric in yards per minute. The width adjustment is driven by a small electric motor and is controlled by a push button. The actual width of cloth in inches is indicated at all times by a gage in the front of the dryer.

The manufacturer states that, in most moderate-size mills, the installation of a new tenter dryer equipped with the latest improvements will pay for itself in less than two years—one machine replacing several old ones in some instances.



SHUTTLE-BOX CONTROL



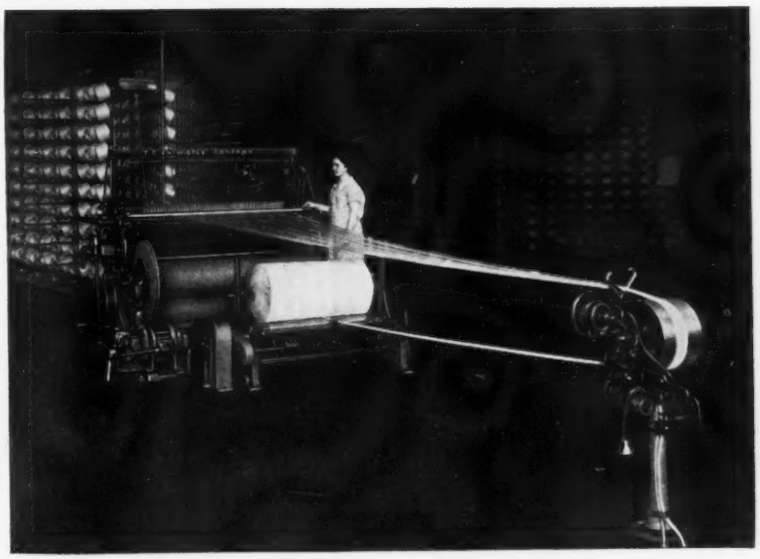
TENTER DRYER

Two-Piece Shuttle-Box Control

• A simplified shuttle-box control, consisting of only two pieces, has been invented by J. Manning Bolt, overseer of weaving, Brandon Corp., Greenville, S. C., and is being sold by Bolt Textile Devices, Inc., Box 414, Greenville. The smaller part is fastened to the protector rod and consists primarily of a lifting finger pointing toward the rear of the loom. The other part is bolted to the pitman arm and is so devised that it contacts the finger as the crankshaft nears top center. As the crankshaft reaches top center completely, the tension from the protector-rod spring is removed by pulling the binder finger away from the binder. Thus, the shuttle box is left free of any tension or pressure on the shuttle as the picker stick throws the shuttle from the box. At the same time the device postpones

tension on the opposite shuttle box until the crankshaft nearly reaches back center, at which time the shuttle is almost completely in the box. At this point, the tension is suddenly applied just in time to keep the shuttle from rebounding. This permits much power to be taken off the loom by putting the lugs higher on the picker stick, the only adjustment necessary for installation with the exception of a slight tightening of the protector-rod spring. Operating with the lugs higher on the picker stick means a big saving in front and back binders, pickers, picker sticks, pick shafts, cams, head gears and other parts which go into making up the pick motion of a loom, especially high-speed looms. Manufacturers assert that exhaustive tests have shown that use of the device decreases filling breaks by at least 75%. Application of attachment is said not to affect the functioning of the protector motion which will continue to operate even though the tension control breaks or gets out of adjustment for some undetermined reason.

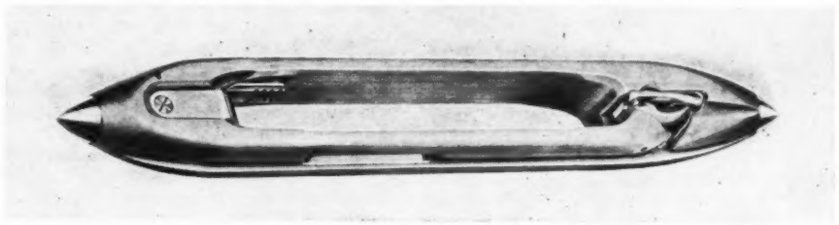
BEAM & BALL WARPER



Worsted Shuttle

• Loose and tight picks are said to be eliminated by the new worsted tension shuttle placed on the market by U S Bobbin & Shuttle Co., Lawrence, Mass. The shuttle is designed to give positive tension on the first pick in bobbin-changing looms, and the mechanism of the die-cast eye is adjustable to practically any degree of tension desired.

The manufacturer states that the original model of the shuttle was made a year ago and that improvements have been made as the result of exhaustive mill tests.



WORSTED SHUTTLE

Beam and Ball Warper

• A combination ball and beam warper capable of yarn speeds up to 350 to 400 yd. per minute has been placed on the market by T. C. Entwistle Co., Lowell, Mass.

The new warper has an individual motor drive and silent chains and sprockets. All rolls are in ball bearings. The comb stand is equipped with an automatic lint cleaner and electric stop motion, and a new chain traverse motion is used. The lease and indicating clocks are on the floor stand.

Multiple Piece Dye System

• Riggs & Lombard, Inc., Lowell, Mass., are offering a multiple piece dye kettle which consists essentially of a series of two to six kettles of any given standard size all fed from one dye tank by means of a pump. The kettles are connected with the dye tank in such a manner that one or more can be cut out of production by turning a valve, and when so cut out they can be used individually to produce different shades if desired.

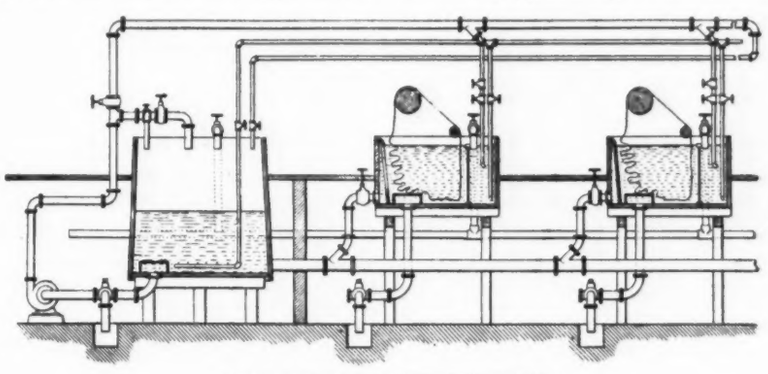
The system can be supplied complete or can be applied to existing dye kettles and is designed to produce a large yardage of uniform shade.

Time-Study Machine

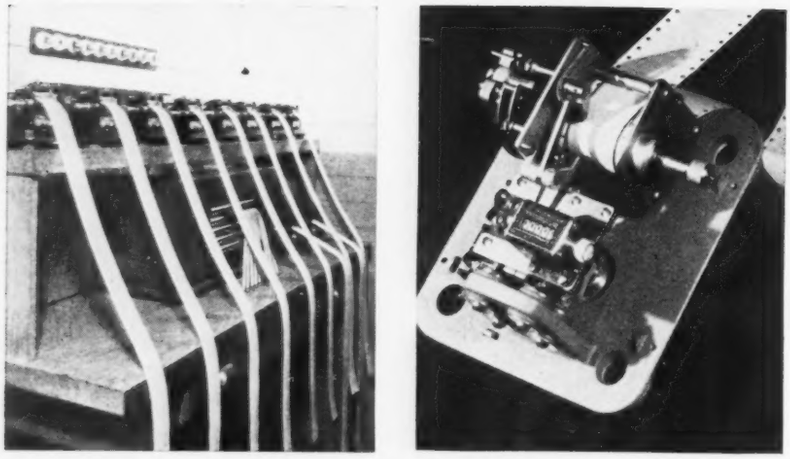
• C. A. Marston Co., 506 Washington St., Braintree, Mass., has developed the Marstograph, a portable, electric, time-study device which may be installed at any machine or process operation, or set up in the office no matter how remote. It will automatically print the story of operating efficiency and idle machine time upon a continuously moving strip of perforated paper tape, and, at the same time, register yardage or any other unit of production. The device is used in connection with the setting of piece work, for comparing operating efficiency of new and old machines, to determine the output of different shifts, to determine the number of machines an operator can handle efficiently, for making check runs, for the control of quality on process operations (such as jig dyeing), etc.

The Marsto-graph is electrically connected to any machine in the mill, through a switch or contactor. There are many methods for mounting this switch, one being to screw the threaded end of a small shaft, which extends out the back, directly into a tapped hole in the end of some idler roll, which is made to revolve whenever material being manufactured or processed passes over it. Each revolution will make and break the electric circuit to the recording device, where the yardage will be registered and a short horizontal line printed upon the slowly moving paper tape.

Paper tape is fed at a continuous lineal speed of 5 in. per hour; therefore, if one yard per minute is produced by the machine in the mill, short horizontal lines, evenly spaced $\frac{3}{32}$ in. apart, will be printed upon the tape, and each yard will register upon the counting mechanism. If 100 yd. per minute pass through the machine, 100 marks will be printed in this same space on the tape, producing a solid bar chart or



MULTIPLE DYE KETTLE



TIME STUDY MACHINE

graph, the density of color being a visible index of speed.

Whenever production is stopped, a break appears in the bar chart, leaving a blank space upon the tape that can be read in minutes and seconds. Blank spaces may represent loading and unloading time, or other regular parts of the operation; but if there are delays because of breakdown, defective goods, no material, etc., the reason may be printed by the operator directly upon the tape with a hand stamp.

In such work as jig dyeing, where the material must travel back and forth through the different washes the exact number of times as prescribed by the chemist, the graphic analysis serves a double purpose—a control over quality, and a detailed record of individual operating efficiency.

The Marsto-graph is available in single units, with different lineal speeds of paper feed, and with or without the counting mechanism. Multiple units of any number up to ten may be had on one base plate.

Bobbin Board

• The new self-stacking handle developed by Johnson Engineering & Mfg. Co., Wilkes-Barre, Pa., makes possible the nesting and stacking of bobbin boards with a predetermined clearance between the bobbin heads, thus eliminating load and pressure. The stacked boards can be transported safely as a unit by using a lift truck, and shelf trucks and stationary racks are not necessary.

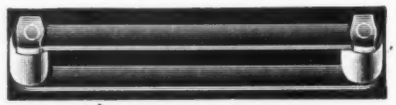
When carried by the operative, the self-stacking end makes a suitable handle, as the center of gravity is thrown forward and the board hangs at an angle which prevents the bobbins from sliding off the pins and facilitates handling in narrow aisles. The boards are Udylite rust-proofed and can be used for steaming and conditioning.

BOBBIN BOARD

Doup Spacer

• Development of a Doup spacer possessing roller-bearing action has been announced by Steel Heddle Mfg. Co., 2100 W. Allegheny Ave., Philadelphia, Pa. The spacer has a needle rod on either side with rollers between them at both ends. The surfaces of the rollers extend beyond the ends of the needle rods and afford a bearing action that is designed to eliminate cutting and friction. The rollers themselves are made of rust-resisting metal and turn on fixed bearings. Proper spacing for needles between the needle rods is assured by the manner in which the needle rods are locked at both ends by the lock nuts.

SPACER



NEW DYES & CHEMICALS

Permanent-Finishing Compounds

• A series of compounds of the alkali-soluble, cellulose-ether type for producing permanent finishes on cotton fabrics has been placed on the market recently by Sylvanic Co., Inc., 122 East 42nd St., New York. The preparation, properties, and application of these materials were described by Dr. Wallace P. Cohoe, vice-president Sylvanic Co., at a meeting of the American Section, Society of Chemical Industry, held Feb. 19, in New York. An abstract of Dr. Cohoe's paper follows:

Any solution of cellulose and its derivatives can be applied to woven cloth, but reasons of economy restrict this use to aqueous solutions for general purposes. In this class are the alkali-soluble cellulose ethers of Dr. Lilienfeld. These alkali-soluble cellulose ethers are usually made from bleached sulphite pulp with a high alpha cellulose content. In appearance, they constitute a fluffy mass of white fibers. No structural changes in the fibers take place in forming the ethers. As they may be so prepared as to possess, in solution, a wide range of viscosity, solutions may be either very thin, or so thick as to flow very slowly. The choice of viscosity for practical use depends upon the purpose which is intended. These ethers are perfectly stable and may be stored indefinitely without chemical change or discoloration.

Three general methods of formulation may be employed to attain a variety of effects; viz, (1) Pure Sizes, consisting of cellulose ethers, caustic soda, and water. Ether contents of 3½ to 5% may be applied to secure a linen appearance and hand. Where stiffening effects are desired, as in the case of interlining, concentrations of 6 to 8% may be used. (2) Mineral fillers may be incorporated, either for the purpose of softening or closing up the interstices of low grade cloth, or to so fill cloth as to make the production of a vellum-like surface possible. Ethers of proper viscosity will carry up to 200% of their weight of finely powdered talc without appreciable loss in the laundry. With clay, samples containing as high as 400% clay on the ether content, have been found to withstand laundry action satisfactorily. (3) A patented process by Lilienfeld consists in the production of a lather or foam, with or without mineral fillers. This method makes possible the employment of high ether concentrations without imparting a stiff or boardy effect to cloth so treated.

In applying these compounds it is common practice to lead the cloth through the solution, under a dip roll, and into the padder. The excess of solution carried up by the cloth runs back into the tank beneath the padder. With heavy solutions, application may be made with a back-filler, in which case cloths of open construction may have their interstices partly or entirely closed, as may be desired.

The next operation is the coagulation of the deposited solutions to remove caustic soda and thereby precipitate the cellulose ethers in the position where they are placed by the application. Various methods may be followed; i.e., dilute solutions of acid, or concentrated salt solutions.

Following washing out of acid, the cloth goes through the usual finishing range. Because of the permanence of the ethers under the action of various bleaching chemicals, it is possible to apply any of the types of solution mentioned above to gray cloth; after coagulation, the cloth can be put in rope form and filled into a kier.

Features of aqueous-cellulose-treated cloth are as follows: (1) Appearance—linen-like, smooth, and lustrous, with the general effect of improvement in quality of material. (2) Hand—improved, with the soft raggy hand being replaced with one

of fullness and linen-like coolness, giving the impression of more and better fibers present. (3) Durability—increased tensile strength and notably higher resistance to abrasion, therefore longer life. (4) Shrinkage—materially reduces shrinkage (5) Freedom from discoloration—preliminary studies on soil test show cloth with alkali-cellulose ethers superior to standard finish. (6) Dyeing—readily dyed. (7) Permanence—compare favorably with other aqueous cellulose solutions which have been employed as permanent sizes and appear to have a general superiority over regenerated cellulose, in having a lower coefficient of expansion when wet.

Du Pont Products

• E. I. du Pont de Nemours & Co. announces the following new dyes: Du Pont Chromate Brown EBR, a chrome color yielding reddish chocolate-brown shades, somewhat redder than those obtained with DuPont Chromate Brown EBN; it can be dyed by the top-chrome, chromate, or bottom-chrome methods; but the first two give superior fastness, producing dyeings of good resistance to carbonizing, fulling, light, perspiration, and washing.

Acetamine Yellow 3G, a new acetate color which produces bright, greenish shades of yellow, of very good resistance to dry cleaning and satisfactory fastness to light, perspiration, and washing.

Vat Khaki

• National Aniline & Chemical Co. announces the following new product: Carbanthrene Khaki 2G paste, an anthraquinone vat dye producing khaki shades of excellent fastness to perspiration, washing, boiling soap and boiling soda ash, chlorine, peroxide bleach and rubbing; and very good fastness to sunlight; it reduces readily and is recommended for dyeing in open tubs and machines, as well as for pad-jig work.

NEW PUBLICATIONS

This Labor Union Racket, by Edward Dean Sullivan; Hillman-Curl, Inc., New York; $2.00.

This book should be required reading for both industrialists and labor-unionists. It would tell the former what they are up against, and stir the honest minded individuals in the latter group to chase out the racketeers for their own protection. The story is almost incredible—and yet true, because the author apparently knows his facts. It is written in a most readable style by the man who exposed Chicago in the book "Rattling the Cup on Chicago Crime" which became a best seller.

He reaches the inescapable conclusion that "incorporation (of labor unions) is the certain method of voiding the racketeer automatically, and it would do even the soundest of unionism no injury whatever." This reviewer believes Mr. Sullivan should have said "will do the soundest of unionism good" because he feels the reputation of all unionism is at stake.

Effect of Number of Warp and Filling Yarns per Inch and Some Other Elements of Construction on the Properties of Cloth: National Bureau of Standards Research Paper RP 862; by H. F. Schiefer, D. H. Taft and J. W. Porter; Superintendent of Documents, Washington, D. C.; 5 cents.

For this study a series of plain-weave and 3/3 basketweave cloths were woven from 80s cotton yarn, with the number of ends and picks varied from 80 to 120 and with the twist multiplier of the filling varied from 2.48 to 5.64. The cloths were tested for weight, thickness, air permeability, elongation at rupture, breaking strength, fabric assistance, and tear resistance.

While many of the results of this study do no more than substantiate the reasoning of textile technicians (and they are no less welcome on that account), other results shed new light or offer food for thought on certain influences affecting cloth structure. Some of the conclusions are as follows: Elongation at rupture increases with the number of ends and picks per inch. Fabric assistance is not always increased by an increase in the ends and picks, as the greater packing of warp and filling yarns may result in greater loom abrasion and poor weaving, particularly in plain weaves. The number of ends and picks appears to have little effect on tear resistance, and this resistance is greater for the basket weave, which is more open and contains fewer yarn interlacings than the plain weave. The effect of increased filling twists was found to be as reported in Research Paper RP 861, but it was noted that the filling tear resistance appears to increase slightly with the twist of the filling yarn.

Elements of Retail Selling, by Paul H. Nystrom; The Ronald Press Co., New York; $2.40.

Dr. Nystrom's extended knowledge of retailing is here presented in elementary form for beginners in the store. The volume, which comprises 19 chapters, with two appendices, covers the practical aspects of retailing as these confront the novice, and also enters more advanced fields such as "Psychology of Selling" and "Suggestion Selling." The style is simple and direct, well suited to the book's major purpose of educating beginners.

Cotton Production and Distribution 1935-36; U. S. Dept. of Commerce; U. S. Government Printing Office, Washington, D. C.; 10c.

This bulletin gives data on the production, consumption, and stocks of cotton in the United States; activity in cotton spinning; imports and exports of cotton; world production, etc.

BUSINESS NEWS

• **Saco-Lowell Shops,** Boston, reports net profit of $713,357 for the year ended Dec. 31, 1936, as compared with $10,917 in the previous year. In his annual report, David F. Edwards, president, stated that a plan was being worked out for a reorganization of the capital structure, which he described as "clumsy."

• **Union Special Machine Co.,** Chicago, has moved its New York office to 116 East 27th St., and William Bleicher has been promoted to the position of manager. The company also has reopened an office at Utica, N. Y., with P. J. Steeper, formerly in charge of the New York office, taking over its organization and management.

• **Robert Reiner, Inc.,** Weehawken, N. J., has announced its withdrawal as distributor in the United States for the Wirth tricot and milanese knitting machines and the Schlick beaming machines. The company will shortly make an announcement concerning a line of machines the organization will distribute.

• **Link-Belt Co.,** Chicago, has announced the appointment of **James Robertson Co., Ltd.,** with headquarters in Montreal, Que., as exclusive distributors of Link-Belt automatic coal burners in Canada.

• **American Monorail Co.,** Cleveland, O., has opened an office in Charlotte, N. C., in charge of H. W. Howarth, who was recently connected with Lanett Mill of West Point Mfg. Co., and formerly was chief field engineer with Robert & Co. The Greenville, S. C., office of the company has been moved to La Grange, Ga., remaining under the management of Curran S. Easley.

• **Minneapolis - Honeywell Regulator Co.,** Minneapolis, Minn., announces an agreement for the acquisition of the complete line of pneumatic controls manufactured by **National Regulator Co.,** Chicago. As a result of the acquisition, Minneapolis-Honeywell is now able to offer a full range of both pneumatic and electric controls and control systems for the heating, ventilating, and air conditioning industries.

• **Wilson Textile Machinery Co.,** Greenville, S. C., has been established by J. R. Wilson, formerly superintendent of Columbia Mfg. Co., to deal in new and used textile machinery.

• **Medart Co.,** St. Louis, Mo., has opened an office at Kansas City, Mo., in charge of W. A. Crooks.

• **Warwick Chemical Co.,** West Warwick, R. I., has opened a New York office for the sale and promotion of Impregnole at 580 Fifth Ave, with William Oseasohn as manager. The company also announces the addition to its technical staff of Robert Pinault, formerly with Celanese Corp.

• **Commercial Investment Trust Corp.,** New York, reports net profit of $21-181,020 for the year ended Dec. 31, 1936, as compared with $15,867,591 in the previous year. After allowing for preferred stocks, the common stock earned $6.07. A dividend of $1 per share on the common has been declared, payable April 1.

• **Cohen Machinery Co., Inc.,** Manchester, N. Y., has purchased the former No. 4 Canal Bldg., of Amoskeag Mfg. Co., to expand its business in new and used mill supplies.

• **Textile Banking Co., Inc.,** New York,

reports net income of $609,210 for the year ended Dec. 31, 1936, as compared with $739,557 in 1935.

• **United States Dyestuff Corp.,** Boston, announces that it has been appointed sole selling agent in New England for Etablissements Kuhlmann, Saint-Denis Dyestuff & Chemical Co., Saint Clair-du-Rhone Dyestuff & Chemical Co., and Mulhouse Dyestuff & Chemical Co.

• **James Talcott, Inc.,** New York, reports net income of $569,625 for the year ended Dec. 31, 1936, as compared with $481,952 in 1935.

• **Cochrane Corp.,** Philadelphia, has consolidated sales in the New England territory under **Cochrane Steam Specialty Co.,** 80 Federal St., Boston.

• **Mathieson Alkali Works (Inc.),** New York, has announced the appointment of **New York Quinine & Chemical Works,** Brooklyn, N. Y., as less carload jobbers for the metropolitan area.

• **Lincoln Electric Co.,** Cleveland, O., has moved its Cincinnati office to American Bldg., Central Parkway at Walnut St. The company has added Robert A. Wilson, George Mandula, and A. T. Cox, Jr., to its Chicago sales staff.

• **Polaroid Corp.** is cooperating with the New York Museum of Science and Industry, in displaying the world's first three-dimensional movies in full color at Rockefeller Center, New York City. This film incorporates a number of the first experimental stereoscopic industrial shots in full color ever taken. They show the various operations of making valves and were filmed in the factory of the Hancock Valve Division of the Consolidated Ashcroft Hancock Co., Bridgeport, Conn. In these novel movies the screen appears to be a window through which the spectator witnesses three-dimensional people walking about at different distances from the observer. The exhibit is open to the public and will run for several months.

• **Aurora Pump Co.** Aurora, Ill., announces two important additions to the executive personnel: Frank S. Main and Lionel W. Claypool, both formerly with Micro-Westco become president and vice-president respectively of the company. Mr. Main has been actively engaged in manufacture and sale of pumps for many years. Mr. Claypool, active in both sales and engineering phases, is credited with important contributions to the efficiency increase of turbine-type pumps widely used in industrial applications.

• **Fiberloid Corp.,** Indian Orchard, Mass., has awarded contract for a factory addition 28x28 feet, to the Adams & Ruxton Construction Co., 1387 Main St., Springfield, Mass.

• **Bunting Brass & Bronze Co.** has opened new branch sales offices and warehouse facilities at 296 Ivy St., N. E., Atlanta, Ga. The company has moved from the combination Atlanta warehouse, from which previously it served the trade, into larger quarters at the new address.

• **Robert Gair Co., Inc.** has acquired the business, equipment, and inventory of the Pa Pro Co., of Utica, N. Y., and the Holyoke Fibre Box Co., Inc. of Holyoke, Mass. The two units will be operated as the Pa Pro Containers Division and the Holyoke Fibre Box Division of Robert Gair Co.

• **National Oil Products Co.** held an unusually interesting series of staff meetings this winter. In December, Howard S. Nieman, patent attorney discussed patent protection, emphasizing the importance of accurate records of an invention. At the January meeting Dr. Gerald L. Wendt, Editor of *Chemical Reviews,* spoke on "Hunches and Their Sources." His talk was based on the theory that the subconscious mind is the fount of inventive effort. On Feb. 1, at the second meeting of 1937 William G. Nash, M.D., Newark, N. J. spoke on "General Allergies in Humans."

Technical Laboratory Feature of General Dyestuff's New Building

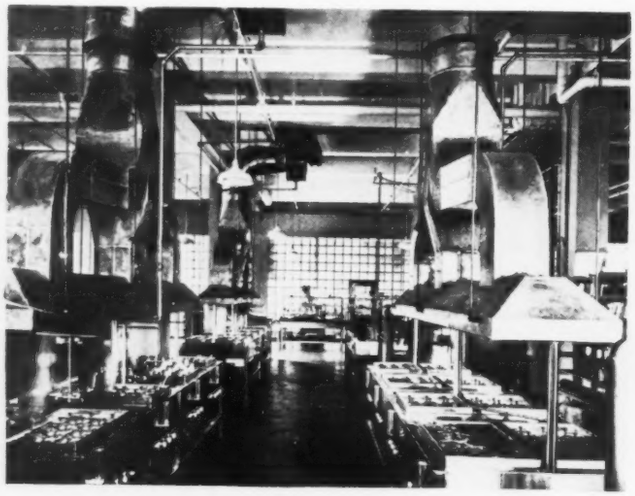
FOLLOWING the completion of its new headquarters at 435 Hudson St., New York, General Dyestuff Corp., invited a group of representatives of business and technical publications to visit the building and inspect the offices, laboratories, warehouse, and other facilities which the company has now combined under one roof. After making a tour of the building, the guests were entertained at lunch by E. K. Halbach, president of General Dyestuff Corp.

Of the many unusual features of this modern building, two of outstanding interest are the extensive use of structural glass brick and the carefully planned laboratories. Use of glass-brick partitions for executives' offices and other rooms makes for efficient lighting of the laboratories which they adjoin. In the various laboratories, apparatus and equipment of the most up-to-date types have been arranged to give straight-line flow of work.

The three primary functions of the technical laboratory, as pointed out by W. H. Cotton, technical director, are to standardize dyes, to test new products, and to render technical assistance to the company's customers on dye-application problems on textiles, paper, leather, and other materials.

In the textile laboratory, the usual apparatus is supplemented by dyeing machines, printing machines, agers, and other types of equipment which permit duplication on a small scale of actual textile mill conditions. Other noteworthy features of this laboratory are the extensive use of stainless-steel apparatus, electrically heated and thermostatically controlled dyebaths, and corrosion-resisting hoods for removing vapors and thus preventing fog. Benches, desks, chairs, pillars, ceilings, etc., are painted a neutral gray and floors are of gray tile—this color having been adopted to insure accurate color matching. Fadeometers, "daylight" lamps, and even ultraviolet lamps are among the other types of equipment used in testing and standardizing dyes.

Six floors of the building are devoted to warehouse purposes, including a bonded warehouse. The repacking and mixing department is now air-conditioned and the rest of the building is so designed that air-conditioning equipment can be installed easily. By combining its offices, laboratories, warehouse, and shipping rooms in this up-to-the-minute building, General Dyestuff Corp. has greatly improved its facilities for rendering prompt and satisfactory service to its customers.



Section of textile laboratory in new building of General Dyestuff Corp.

Use of structural-glass-brick partions makes for efficient lighting of adjoining rooms.

The Personal Page

John A. Miller has been elected president of Exposition Cotton Mills, Atlanta, Ga., succeeding the late E. C. Peters. Mr. Miller served as executive vice-president for a number of years.

J. P. Abney, of Greenwood, S. C., has been elected president of Anderson (S. C.) Cotton Mills, as result of recent change in ownership of controlling stock in this concern. **L. E. Foster,** of Greenwood, is vice-president, and **J. E. Burnside,** of Greenwood, is secretary.

J. R. Dover, Jr., has been elected president of the newly chartered Esther Mills, Co., Shelby, N. C. Other officers are: vice-president, **C. C. Blanton;** secretary-treasurer, **Charles Dover;** comptroller, **Benjamin Nadel.**

W. D. Anderson, Sr., who retired from the presidency of the Bibb Mfg. Co., Macon, Ga., last March when he was succeeded by his son, the late W. D. Anderson, Jr., has been elected president again.

Sam L. Copeland has been elected a member of the board of directors and vice-president of Marion (N. C.) Mfg. Co. The meeting was held to fill vacancies caused by the death of Rignal W. Baldwin. **Samuel Hamill** of New York, who is also treasurer, was elected president.

Joseph H. Bumsted, now in charge of selling activities in the New York market for Booth Mfg. Co., New Bedford, Mass., was elected a director of the corporation at the recent annual meeting of stockholders. **Spencer B. Montgomery** of Boston also was added to the board. **Albert Winterbottom** of South Dartmouth, Mass., who had been acting treasurer for some months, was elected to that position, and also to the board of directors.

J. P. Wright, president of Continental-Diamond Fibre Co., Newark, Del., has also taken over the duties of general manager, following the resignation of **L. W. Tarr.** He will be assisted by **J. Frank Anderson,** who will be responsible for factory operation and maintenance, **Robert Stewart,** who will serve as production manager, and **Dr. G. E. Landt,** who will act as technical director.

L. E. Murphy has retired as chairman of the board of E. F. Houghton & Co., Philadelphia.

George A. Sloan has been elected a director of Bankers Trust Co., New York.

Lewis B. Williams, chairman of National City Bank of Cleveland, has been elected a director of Industrial Rayon Corp.

Merton C. Fisher was elected a director of the Neild Mfg. Co., New Bedford, Mass., to fill the vacancy created by the death of Charles M. Cole.

James A. Chapman, Jr., has been elected president and treasurer of Inman (S. C.) Mills, and Riverdale Mills, Enoree, S. C., to succeed his late father.

B. Ellis Royal, of La Grange, Ga., has been appointed associate editor of the *Textile Bulletin* and the *Southern Knitter* succeeding the late D. Harvey Hill, Jr. Mr. Royal, a native of Louisiana, took the four-year textile course at Alabama Polytechnic Institute and then joined Callaway Mills, spending two years in the various departments.

Ewald H. Schniewind has resigned his position as vice-president of Susquehanna Silk Mills, New York, effective May 31.

Harry C. Carter, formerly superintendent of Blue Ridge Rayon Co., Alta Vista, Va., has become vice-president and superintendent of Carter Fabrics Mill, Greensboro, N. C.

Paul Carter has been elected secretary-treasurer and manager of Lorraine Hosiery Mills, Inc., Sweetwater, Tenn.

Frederick Muller, general technical manager, and **Brainerd S. Pidgeon,** general sales manager, have been elected vice-presidents of Stunzi Sons Silk Co., New York.

Walter L. Lowry, for many years identified with the cotton textile and machinery industry, has been made vice-president of Machinery Liquidating Co., Inc., with offices at 33 West 42nd Street, New York City.

George W. Skidmore, treasurer and general manager of Union Knitting Mills, Logan, Utah, has resigned. **Wilbur E. Skidmore** has been named general manager and **Langton Barber** has taken over the duties of treasurer.

George B. Fisher, formerly production manager of Salembier & Villate, New York, has become treasurer of H. C. Godfrey Co., Inc., silk yarns.

Charles Wink has been elected vice-president and a director of Oak Worsted Mills, Inc., Philadelphia.

Robert B. Mathews has been elected a vice-president of John P. Maguire & Co., Inc., New York, replacing **Frank Maguire,** who resigned.

J. W. Quinn, formerly assistant superintendent of Hawthorne and Hampshire Mills, Clover, S. C., is now superintendent of American Yarn & Processing Co., Mount Holly, N. C.

W. A. Woodruff has been advanced to the position of factory manager of all plants of Bibb Mfg. Co., Macon, Ga. **L. R. Brumby** has been moved up to general superintendent and his former post of assistant general manager has been filled by **Harry A. Allen.**

Carl A. Johnson, superintendent of Blackstone, Mass., plant of Lonsdale (R. I.) Co., has been made general superintendent of all the company's mills.

Wendell P. Perkins has been made manufacturing superintendent of Queen City Cotton Co., Burlington, Vt., a newly created post.

Thomas A. Printon has been promoted to the position of general sales manager of industrial activities of National Oil Products Co., Harrison, N. J. The sales department setup is now as follows: textile department, Mr. Printon, manager; textile rayon division, **Dr. E. A. Robinson,** assistant manager; textile specialties division, **C. J. Kenlan,** assistant manager.

A. J. Farber, president of Friedman-Blau-Farber Co., Cleveland, Ohio, who has been elected president of National Knitted Outerwear Association

Prof. George B. Haven, Professor Emeritus of Advanced Machine Design at Massachusetts Institute of Technology, was given an informal testimonial dinner on March 11 when Committee D-13 of the A.S.T.M. met in Providence, R. I. Prof. Haven is a past chairman and honorary member of the committee.

John C. Turrell, a director of Cluett, Peabody & Co. and in charge of Sanforized-Shrunk, is visiting South America to discuss licensing arrangements with finishing plants in Brazil and Argentine.

J. C. Craven has assumed his new duties as superintendent of Columbia Mfg. Co., Ramseur, N. C. He succeeds **J. R. Wilson,** who resigned.

J. C. Edwards, formerly superintendent of Martha Mills, Thomaston, Ga., is now superintendent of Morgan Cotton Mills, Inc., Laurel Hill, N. C.

G. H. Lollis, superintendent of Chiquola Mfg. Co., Honea Path, S. C., has been elected mayor of that city.

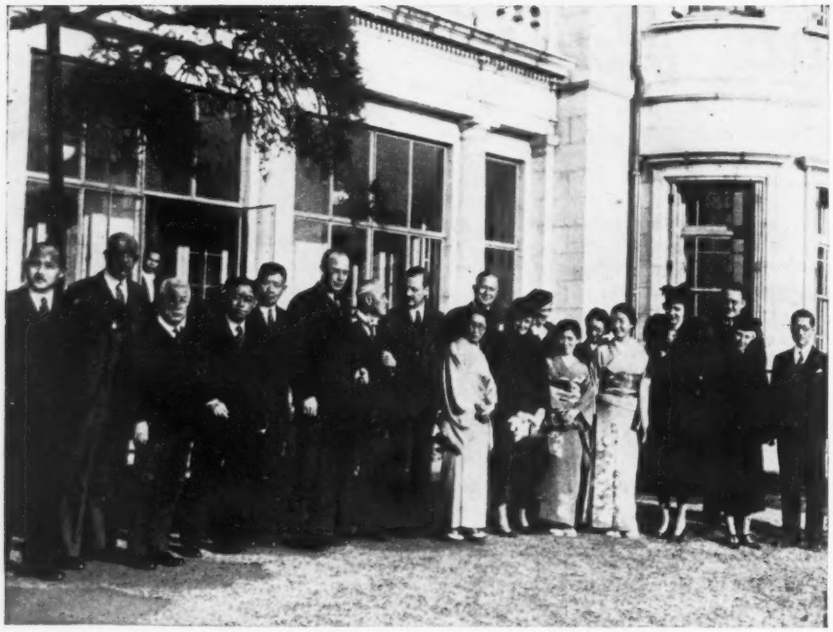
Clarence R. Barton, formerly with Slater (S. C.) Mfg. Co., is now superintendent of Plants No. 1 and 2, Chadwick-Hoskins Co., Charlotte, N. C.

William H. Driscoll, former vice-president in charge of mechanical equipment with the Thompson-Starrett Co., has become associated with Carrier Corp., Newark, N. J., as vice-president in charge of construction.

W. H. Regnery and associates of Chicago, Ill., have purchased the controlling interest in Joanna Cotton Mills, Goldville, S. C.

Daniel J. Saunders has been named manager of industrial sales for Permutit Co., New York. Mr. Saunders has been with the company for seventeen years.

Aaron B. Quinn, who has been connected with one of Dover Mills, Shelby, N. C., was recently elected assistant



COTTON TEXTILE MISSION IN JAPAN—Left to right may be seen Donald Comer, Dr. Murchison, Harry L. Bailey, Cason Calloway and Robert Phillip, Secretary to the Mission.

treasurer of Cleveland Cloth Mills at that place.

James E. McDougall has been transferred from Philadelphia to Charlotte and will represent Smith, Drum & Co. in the southern States.

W. K. Dana has been appointed superintendent of Laurens (S. C.) Cotton Mills, to succeed **J. M. Moore,** resigned. Mr. Dana received his early training at Judson Mills, Greenville, S. C.

Frederick S. Bacon, for seven years chemical engineer for Boston Blacking & Chemical Co., Cambridge, Mass., resigned that position on Feb. 1, 1937, to join the staff of Gustavus J. Esselen, Inc., chemical consultants, Boston.

T. F. Blume, formerly superintendent of Roberta Mills, Concord, N. C., has resigned to devote all of his time to White Park Mills Co., Concord, of which he is also superintendent.

Jack M. Alexander, Charlotte, N. C., has joined the sales force of Piedmont Broom & Mop Co., and will represent the company in the southern territory.

J. C. Baucom has become superintendent of Roberta Mills, Concord, N. C. He succeeds **T. F. Blume,** who resigned to devote his time to other interests.

H. T. Sedgwick, of Charlotte, N. C., has been appointed by Fiske Brothers Refining Co., New York, as district sales engineer for the line of Lubriplate lubricants in North and South Carolina.

J. Harold Swanson has succeeded the late Dan S. Pritchett as superintendent of Georgia-Kincaid Mills No. 1, Griffin, Ga.

Frank H. Naylor has resigned as agent for Bibb Mfg. Co., Columbus, Ga., plant.

Robert A. Baker is now representing Royersford Needle Works, Royersford, Pa., in Virginia, West Virginia, North and South Carolina. Mr. Baker will continue as Southern representative for H. Brinton Co., makers of automatic knitting machinery, with whom he has been associated for the last seven years.

Hugh D. Camp has become general manager of Chesapeake Camp Corp., Franklin, Va. He was formerly vice-president and general manager of Roanoke Mills Co., Roanoke Rapids, N. C.

D. F. Dalton has become superintendent of Winville Corp., Winder, Ga.

D. C. Ragan, of High Point, N. C., is now one of the representatives of Watson-Williams Mfg. Co., Millbury, Mass., in the southern territory. Mr. Ragan will continue to represent U S Bobbin & Shuttle Co., Lawrence, Mass., also.

W. J. Holden, superintendent of Holt Mfg. Co., Graham, N. C., has resigned.

Carl H. Geister has joined the technical laboratory staff of E. I. du Pont de Nemours Co., Dyestuff Division.

C. G. White, superintendent of Phenix Mills Co., Kings Mountain, N. C., will also be superintendent of Dilling Mills Co., of the same town, which recently was taken over by Phenix.

L. S. Neece has relinquished his duties as purchasing agent for Carolina Cotton & Woolen Mills, Spray, N. C., and now holds a similar position with Rosemary Mfg. Co., and Roanoke Mill, Roanoke Rapids, N. C.

John W. Huffaker, Charlotte, N. C., for the last ten years associated with the rayon sales division of Du Pont Co., with offices on South Church Street, Charlotte, has been named president of the General Appliance Co., Charlotte.

Dr. Howard E. Fritz, formerly chemical sales manager of B. F. Goodrich Company, Akron, O., mechanical division, has been named manager of Koroseal sales and development.

Orville T. Colby has resigned as superintendent of the Belding-Heminway-Corticelli Co., Putnam, Ct., to enter the machinery brokerage business. **Francis H. Murphy,** at present mayor of the city and also assistant superintendent, has been appointed Mr. Colby's successor.

John D. Scully has resigned as a vice-president of Southeastern Cottons, Inc., New York. His position as manager of the blanket department will be filled by **George F. Johnson.**

Richard E. Housman, formerly plant manager and superintendent of Hanover (Ill.) Woolen Mills Co., has succeeded **John Daniels** as mill agent at La Porte-Daniels Woolen Mills, Inc., La Porte, Ind.

H. B. Ketchum has been placed in charge of the new office of Filatex Corp. at Mount Holly, N. C.

John W. Geil and **Edward A. Dawson** have been elected vice-presidents of Turner Halsey Co., New York.

James A. Gardner has been appointed general manager of the Cleveland Cloth Mills, Shelby, N. C., succeeding **O. M. Mull,** who recently disposed on his interests in the mill. Mr. Gardner is the son of **O. Max Gardner.**

Joseph Roy Fish has become superintendent of Suncook (N.H.) Mills. He was formerly with Beaunit Mills, Cohoes, N. Y., and once was with the Cabot Mills, Brunswick, Me. **Ernest Bromley,** who has held the position for several years, has been granted a leave of absence.

L. L. Watkins, of Greer, S. C., has joined the sales force of Jos. Noone's Co., Peterborough, N. H., manufacturers of rollers, clearer and slasher cloths, and will travel the southern States as a special representative.

Horace Slocum of Rochester, N. H., has been named superintendent of the new Somersworth (N.H.) Woolen Co. He was formerly superintendent of Cocheco Woolen Mfg. Co.

W. L. Martwick has been appointed general sales manager of Foster Wheeler Corp., New York.

H. A. Stanley has been appointed district sales agent in North and South Carolina for Roller-Smith Co., New York.

Textile Calendar

- Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, 1937.
- Southern Textile Association, meeting during show week in Greenville, S. C., April 9, 1937.
- Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 19 to 23, 1937.
- American Cotton Manufacturers Association annual convention, Mayflower Hotel, Washington, D. C., May 12-14, 1937.
- National Rayon Technical Conference, Wardman Park Hotel, Washington, D., C. May 14-15, 1937.
- Cotton Manufacturers Association of Georgia, annual meeting, Cloister Hotel, Sea Island, Ga., June 3 and 4, 1937.
- Sixteenth Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 6-11, 1937.

Obituary

Francis Garrou, treasurer of Pilot Full Fashion Mills, Inc., treasurer of Valdese Mfg. Co., president of Waldensian Hosiery Mills, all of Valdese, N. C., and president of Garrou Knitting Mills, Morganton, N. C., died in Spartanburg, S. C., on Feb. 24 while on a motor trip.

J. Walter Levering, aged 67, former treasurer and general manager of Eavenson & Levering Co., Philadelphia, died at Umatilla, Fla., on Feb. 15. Mr. Levering retired from active participation in the business about ten years ago, but remained as a director.

Dr. Lamartine Griffin Hardman of Commerce, Ga., former governor of Georgia, and president of Harmony Grove Mills, died February 18th at Atlanta. He was known throughout the South as a manufacturer, banker, merchant, physician, philanthropist and churchman.

Bernie Gordon, Jr., aged 52, vice-president and general manager of Skenandoa Rayon Corp., Utica, N. Y., died in the Faxton Hospital there on Feb. 19 following an operation.

Peter D. Snelson, aged 52, owner of Throop (Pa.) Silk Mill, died Feb. 18 at his home in Scranton, Pa., following a brief illness.

Fred P. Chapman, 71, president of Franklin (Mass.) Yarn Co., died Feb. 12 at his home in Franklin. He was agent of the American Woolen Company until 1910, when he organized and incorporated the yarn company.

Lucien W. Jarret, aged 50, president and secretary of Sydney Worsted Co., Woonsocket, R. I., died on Feb. 25.

John P. Schwenk, aged 78, president and manager of Pottsville (Pa.) Bleaching & Dyeing Co., died Feb. 22.

Alexander Makepeace, aged 63, former superintendent of American Printing Co. and Richard Borden Mills, Fall River, Mass., and lately owner and manager of the Putnam (Ct.) Fabric Co., died on Feb. 11 in Providence, R. I.

Enno Greeff, aged 55, vice-president of Meinhard Greeff & Co., New York, died on Feb. 25.

George Morgan Snow, aged 77, for many years New England manager of the dyestuffs sales division of the E. I. du Pont de Nemours Co., Providence, R. I., died at Providence on Feb. 22 after a short illness.

Vincent Mannion, aged 35, buyer for American Felt Co., Glenville, Conn., died on March 1 as the result of an automobile accident.

Sigmund Seiferheld, aged 62, president of N. Erlanger, Blumgart & Co., New York, died on Feb. 5.

Major W. C. Heath, aged 70, one of founders and a former president of the Southern Cotton Spinners' Association, which later became the American Cotton Manufacturers' Association, died last month of a heart attack at Monroe, N. C.

Henry W. Roth, aged 75, formerly general sales manager for George H. McFadden & Bros., Philadelphia, died in Callao, Peru, on Feb. 19.

John Henry Beless, aged 79, for 50 years engineer of Lyons Knitting Mills, Needham, Mass., died in that town on Feb. 12.

William Jacobs, aged 69, for 42 years associated with Atlantic Mills, Providence, R. I., as an overseer, died in Norwood, R. I., on Feb. 17.

Benjamin P. Greene, aged 54, general manager of the spinning mills of American Yarn & Processing Co., Mount Holly, N. C., died recently.

John Lee Brown, aged 76, former operator of Laurel Bluff Cotton Mills, Mt. Airy, N. C., and later engaged in the manufacture and sale of machinery at High Point, N. C., died after a short illness.

G. Kenneth Earle, aged 54, chairman of the cotton products committee of the New England Shippers Advisory Board, secretary-treasurer of the Providence Cotton Buyers Association and a prominent cotton merchant of Providence, R. I., died in that city recently.

Textile World Analyst

THE year started off auspiciously in textiles, from the volume standpoint. Mill activity in January, according to TEXTILE WORLD's index, was 14% above that of January 1936 and 28% above a "normal" year (1924-31 average). Although February statistics are not available at this writing, the indications are that the rate for the first two months will show an even greater increase over 1936. . . . Carded fabric margins dropped sharply during February, while yarn margins strengthened (Tables I and II). . . . With the exception of gray cotton fabrics, TEXTILE WORLD's prices indices were fairly steady last month, although raw wool prices actually passed their peak earlier in the month and started to decline.

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufacturers, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

	Cotton Index Numbers				Wool Index Numbers				Silk Index	Rayon
Date	Cotton	Yarns	Gray	Colored	Wool	Tops	Yarns	Cloth	Raw-Silk	Index
1923-25	100	100	100	100	100	100	100	100	100	100
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	68	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
July 1935	61	68	65	69	56	59	70	89	20	23
Aug. 1935	58	68	66	69	56	59	70	89	23	24
Sept. 1935	55	66	68	69	58	60	70	89	25	24
Oct. 1935	57	68	68	69	60	61	73	92	27	24
Nov. 1935	60	70	69	72	62	65	75	92	27	24
Dec. 1935	60	71	69	72	64	66	76	92	26	24
Jan. 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26
Nov. 1936	45	65	74	72	78	82	76	100	26	26
Dec. 1936	48	72	80	74	87	90	84	105	26	26
Jan. 1937	48	73	81	76	90	93	88	108	27	26
Feb. 1937	48	74	78	76	90	92	90	108	27	26

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
		November, 1935.	16.4
August, 1933..	21.4	December, 1935.	16.2
October, 1933.	19.1	January, 1936..	17.2
January, 1934	18.4	February, 1936.	16.5
April, 1934...	17.6	March, 1936...	15.5
July, 1934....	15.5	April, 1936....	14.3
August, 1934..	16.6	May, 1936.....	14.3
September, 1934	18.6	June, 1936.....	15.3
October, 1934..	17.4	July, 1936.....	16.9
November, 1934.	15.8	August, 1936..	18.0
December, 1934.	16.2	September, 1936	18.4
January, 1935..	16.2	October, 1936..	21.2
February, 1935.	16.0	November, 1936	25.4
March, 1935...	15.9	December, 1936.	28.1
April, 1935....	16.1	January, 1937..	28.6
May, 1935.....	16.0	February, 1937.	26.2
June, 1935.....	16.5	Feb. 3 ..	27.1
July, 1935....	15.2	Feb. 10 ..	26.9
August, 1935...	17.1	Feb. 17 ..	26.4
September, 1935	17.9	Feb. 24 ..	26.2
October, 1935..	17.7	Mar. 3 ..	24.3

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
		November, 1935.	16.3
August, 1933...	23.5	December, 1935.	16.3
October, 1933..	20.0	January, 1936..	18.4
January, 1934..	18.3	February, 1936.	17.5
April, 1934....	15.9	March, 1936...	16.3
July, 1934.....	14.7	April, 1936....	15.6
August, 1934...	15.3	May, 1936.....	14.8
September, 1934	15.6	June, 1936.....	14.6
October, 1934..	14.6	July, 1936.....	15.0
November, 1934.	13.5	August, 1936..	16.5
December, 1934.	13.5	September, 1936	16.5
January, 1935..	13.5	October, 1936..	17.2
February, 1935.	13.9	November, 1936	18.0
March, 1935...	14.4	December, 1936.	20.6
April, 1935....	14.1	January, 1937..	20.8
May, 1935.....	13.8	February, 1937.	21.2
June, 1935.....	14.5	Feb. 3 ..	21.0
July, 1935.....	14.3	Feb. 10 ..	21.3
August, 1935..	15.3	Feb. 17 ..	21.4
September, 1935	15.4	Feb. 24 ..	21.2
October, 1935..	15.8	Mar. 3 ..	20.9

TEXTILE WORLD'S

Cotton Digest

THE cooperation of the shippers with the spinners in the enlarged promotional program, now in formation under the direction of the Cotton-Textile Institute, is history-making. The large percentages of both groups which have pledged their support insures adequate financing, which has been missing too often in the past. However, it is to be hoped that another kind of support will be continuously forthcoming from both spinners and shippers, individually and through their associations: namely, advice and suggestion. A promotional plan needs the constant impact of many minds in order that it may continue a living, aggressive movement. If all groups contribute their thought as well as their money, maximum success will be assured.—*Editor.*

Shippers and Spinners Agree on Joint Promotion—Cotton promotion, on a broader scale than ever before attempted, was agreed upon last month at a joint meeting of leaders in the cotton shipping and cotton spinning industries. About 60% of active spindles and practically all of the leading cotton shippers were represented. Financing of the proposed expanded-uses program will be based on an agreement of participating shippers and spinners to put up 1c. on each bale handled or processed, resulting in a 2c. per bale subscription. Objectives of the plan are to offset losses in foreign markets and to encourage increased domestic consumption of cotton. Another meeting is planned for May, at which a definite program will be advanced by C. K. Everett, manager of the New Uses Section of the Cotton-Textile Institute. It is planned to extend the promotion plan to practically all allied interests, including selling agents, laundries, soap manufacturers, railroads, converters, finishers, shippers, and jobbers.

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Anderson Forecasts Price Rise—Another, but slower, rise in prices of cotton gray goods was forecast last month by W. D. Anderson, chairman of the board, Bibb Mfg. Co., Macon, Ga. He was one of the first trade observers to foresee the improved business in 1936. His reason for thinking that prices are heading toward higher levels is that "substantially all legislation being enacted or proposed in the Congress of the United States, or in the State legislatures, tends to increase the cost of doing everything, including the cost of production of every article manufactured, grown, or mined in this country." He further said that "while operations in textile plants are now on a profit basis, it can not be said that the profit is adequate, reasonable or commensurate with the investment," but at the same time "it would not take much of an increase in profit to bring the industry to a profitable basis of operation."

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Cloth Market Digestive, Yarn Strong—The breathing spell in the cotton gray goods market which became evident about the middle of January continued throughout February. Print cloth eased ⅛ to 3/16c., but the slight recession was not serious as there still is an enormous backlog of orders on mill books. Cotton yarns had another good month with a real buying flurry at the close. Prices underwent no general change after the first few days, but buying became a bit more selective. Shipments were about 35% above current sales.

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Industry Needs Help, Says McLaurine—The textile industry of the United States is now going through its most critical period and "it needs help and not persecution or even indifference," according to W. M. McLaurine, secretary of the American Cotton Manufacturers Association, in a recent newspaper article. He reached these conclusions from various figures compiled lately which show great increases in the consumption of foreign-grown cotton, and decreases in the number of spindles in the United States, as compared with the Orient.

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Textile Converters Name Coordinator—The office of impartial coordinator was established by the board of directors of the Textile Converters Association, according to a recent announcement of that organization. Sylvan Gotshal, of Weil, Gotshal & Manges, was appointed to the post. The purpose is to attack problems of unfair allowances and returns, with establishment of a bureau in the future.

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National Cotton Week May 31 to June 5—The week of May 31 to June 5 has been set aside for observance of National Cotton Week, according to the executive committee of the Cotton-Textile Institute. The 1936 promotion held at approximately the same time was said to be the most successful in the history of the event.

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Jap Pact on Velveteen-Corduroy Imports—Effective March 1 for one year, Japanese imports of velveteen and corduroy will be restricted to 2,000,000 sq.yd. and 700,000 sq. yd., respectively, it was recently made known by Lawrence Richmond, treasurer of Crompton Co.

Cotton and Cloth Exports Off—Exports of cotton and other textile fibers, and manufactures thereof, were valued at $436,823,000 in 1936, as compared with $456,166,000 in 1935, a decline of about 4%, according to the Department of Commerce. This decline results from smaller shipments of raw cotton. Piece-goods shipments abroad advanced from 185,565,000 sq.yd., valued at $20,036,000, in 1935 to 200,500,000 sq.yd., valued at $21,874,000, in 1936.

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"Gala Cottons" Keynote of Spring—"Gala Cottons" is the keynote of the Cotton-Textile Institute's 1937 spring and summer swatch book, of which 20,000 copies are being distributed to teachers, merchandising executives, fashion editors, apparel manufacturers, and many others interested in using or selling cottons.

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Key cotton prices of March 1, with comparisons follow:

	Mar. 1, 1937	Feb. 1, 1937	Mar. 2, 1936	Mar. 1, 1935
Spot Cotton, N. Y.	13.50	13.29	11.28	12.37
Ditto, high previous month	13.34	18.33	11.80	12.58
Ditto, low previous month	12.95	12.91	11.25	12.20
10s hosiery cones	29½	29¢	24¢	27½
10s/2 carded skeins	30	29½	24¢	28
20s/2 carded peeler warps	34	34½	27¢	31
60s/2 combed peeler warps	64	64	54¢	56½
60s/2 mercerized cones	76	77½	68¢	70
37 in., 3-yd. drill	10½	10½	8½¢	9½
38½ in., 64 x 60s	7½	8½	5 5/8¢	6¼
36 in. 4-yd. 56 x 60s	8 5/8	8½	7¼¢	7½
Denim, 2.20s	15½	15½	14¢	14½

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Statistics of particular interest to cotton manufacturers showing January operations and the raw material situation:

	Jan.	Dec.
Spindle activity (% capacity)	137.7%	134.5%
Spindle activity in million-spindle hours	8,587	8,679
Cotton consumed (bales)	678,064	692,921
Cotton exported (bales)	538,280	593,860
Cotton imported (bales)	15,007	15,909
Cotton ginned to Feb. 15 (thousand bales)		Jan. 16 11,956

Cotton

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Wool Digest

WOOL manufacturers have a reputation for not always agreeing among themselves. However, we imagine that on one point there is 100% agreement in the industry. We refer to the tribute paid by Lewis A. Hird, at the annual meeting of the National Association of Wool Manufacturers, to Arthur Besse, president, and Walter Humphreys, secretary. "These men are exceptional," he said, "and I should like to pay them tribute for the democratic way in which they have conducted themselves and for the high business level they have established in representing us." . . . Mr. Hird was correct when he said he felt he was expressing the opinion of the membership.—*Editor.*

Demand for wool goods is light, but mills are busy on old contracts and are shipping large quantities of merchandise to the cutting-up trade. The lull is regarded as the natural aftermath of several months of active buying. Clothing manufacturers are more interested in shipping apparel to retailers for Easter promotion than in covering their needs for the following season. If stores succeed in moving large amounts of clothing in the next few weeks, the future of the fall season, as far as piece goods are concerned, will be assured, since brisk business at retail will doubtless lead to early covering for autumn. Meanwhile, mills have enough business on their books to maintain operations at the current rate for eight to ten weeks. The men's wear is about to enter the fall season. Prices named so far show an increase of about 35c a yard over spring opening levels.

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Forecast for tropical worsteds issued by Associated Wool Industries indicates over-checks at 50.2% and small checks at 2.5%, against 40.3% and 16.3% in the forecast of a year ago. Stripes are 15½% against 11.8% in 1936. Grays still lead but with 60% instead of last year's 67%. Blue has preempted second place from tan and dark greens appearing for first time are in fourth place. In weights the 9-9½ oz. fabrics account for 66% against 57% last year.

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Women's wear was moderately active at the close of February. Buyers continued to press for quick shipments of fleeces and shetlands, and sales of worsteds were larger, reflecting the better call for dressy coats. Prices on some standard lines of all-wool flannels were advanced 5c a yard. Demand for white coatings was somewhat better, but is not expected to register real improvement until after Easter.

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"Vest-Pocket Sheep" is the intriguing name given to Angora rabbits by German writers. The government is interested in lifting the present rabbit population from 200,000 to 1,000,000. One scents military expediency behind the move.

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Botany Worsted Mills had the floor at the February meeting of American Association of Textile Technologists, held at the Architectural League of New York. F. W. Horka and G. Metz of that company discussed manufacturing methods from fiber to fabric.

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French system worsted yarn spun in 1936 totaled 41,000,000 lb. against 122,000,000 lb. of **Bradford system** according to report by National Association of Wool Manufacturers. A total of 6,000,000 lb. of hand knitting yarn was delivered in 1936 by both types of spinners combined.

•

Carpet mill census for 1935 shows wool products for that year at $115,257,000 a rise of 53.3% from 1933, but still 33% under the 1929 record. Wage earners at 27,633 were up 32.2% from 1933 and down 13.5% from 1929. Wages at $27,710,137 were up 54.9% and down 29.6% respectively. Of the various sorts velvets led carpet production and axminster the rugs.

•

Tops fluctuate—Spot tops on the exchange began February at $1.22, dropped to $1.16, closed at $1.18, were $1.20 Mar. 10. Trading was slow toward the end of the month. There was considerable resistance to a slump. Raw wool was quiet and generally nominal through lack of mill interest to try the market out.

•

Synthetic wool of the casein type is now being produced in Italy at the rate of 3,500,000 lb. annually. Italian tests on "Lanital" indicated that moths do not attack it and that in mixture with wool the fabric is warmer than all-wool. Belgium is now producing a casein fiber called Cargau.

•

Carpet maintenance and care is the subject of a booklet issued by the Institute of Carpet Manufacturers of America. It covers selection, installation, maintenance, cleaning, etc. It is of value to all who handle or use wool carpets and rugs.

•

Thieves broke into the warehouse of the Hudson (Mass.) Worsted Co. on Feb. 24 and robbed the concern of 35 bales of wool tops. R. Fieldsend, manager, advised TEXTILE WORLD of this in hopes that if an attempt is made to sell the stolen material en bloc, detection may follow.

•

Wool blanket standards are again being distributed by the National Bureau of Standards to makers, sellers and users for their acceptance. It is in general similar to the 1932 standard but rewritten to include camp blankets, automobile robes, steamer rugs, etc.

•

Wool promotion based on the necessity of extensive domestic supplies as a military necessity has caught the ear of a number of manufacturers. Feeling is spreading that the flocks of the Middle and Far West States should be expanded and that consumer interest in wool products should be the actuating medium.

•

Clothing production gain is evidenced in government figures on amount of men's and boys' clothing cut during four weeks ended Dec. 26, 1936. The figures show a gain of nearly 10% over a similar period in 1935.

•

Key wool prices of March 1 and a month ago, and the last two years follow:

	Mar. 1, 1937	Feb. 1, 1937	Mar. 2, 1936	Mar. 1 1935
Fine and fine med. territory	$1.05	$1.08	$0.88	$.063
Ohio ⅜s	.52	.54	.43	.26½
Tops fine 64–66s	1.32	1.38	1.18	.89½
average ⅜s	1.12	1.17	1.05	.73
high ½	1.05	1.10	.96	.61
Noils, fine	.82	.85	.72	.52
½	.62	.66	.58	.40
2-40s 60s wstd. yarn	1.85	1.90	1.60	1.33½
8020 serge	2.20	2.20	1.95	Not quoted

•

Current statistics on wool consumption and mill activity:

	Jan. (5 weeks)	Dec. (4 weeks)
Wool consumed clean equiv.		
Apparel wool, lbs	28,815,000	27,948,000
Carpet wool, lbs	12,800,000	11,556,000
Machinery activity (40 hr. shift)		
Looms (50" and wider)	121.7%	118.9%*
Carpet looms	81.0%	83.8%*
Combs	144.5%	152.9%*
Worsted spindles	109.0%	115.1%*
Woolen spindles	135.0%	141.6%*

*Revised from first announcement.

Wool

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Rayon & Silk Digest

"ANYONE who cares to risk his reputation on the assertion that rayon will *not* be an important tire-fabric material some day, cares less about his reputation than we do for ours". . . . We made that statement on this page a year ago. The recent announcement of the commercial achievement of rayon cord tires for truck and bus use indicates that we were within safe limits in that assertion. No one knows today just how far this new tire material will go in replacing cotton for heavy-duty use—or for any other use for that matter. But, again, no one can say how far it will *not* go. Consequently, an open mind is still in order in this as in all phases of this spectacular fiber.—*Editor.*

The Vanishing Surplus—Such slight stocks as were carried into January by rayon producers, shrank further during February, and on March 1 one leading producer of viscose and acetate yarns had only the equivalent of a day and a half's turnover on hand. Demand for pigment yarn slackened as the print season advanced but activity continued far in excess of production.

•

Lull Weakens Raw Silk—February brought a drop of over 20c. in raw silk prices, due to slow buying by hosiery mills. Spot silk fell from $2.05 on Feb. 1 to $1.82 on Feb. 26, which was the sharpest decline in some months. Importers look for pick-up soon, contending hosiery mills have insufficient raw silk stocks on hand.

•

Silk Fabrics Firm—While sales of all-silk prints were less in February than in January, prices held steady. Outlook for summer sheers, demand for which is just starting, was good.

•

Japan's 1937 Place in the Rayon Race—That Japan's rayon output in 1937 will total 330,000,000 lb., even with curtailment plan continued, was the forecast made in Yokohama last month by Seita Hisamura, foremost Japanese rayon producer. He claims that this advance, which is 60,000,000 lb. above the 1936 total, will definitely give Japan world leadership in volume.

•

Paris Accents Rayon Jerseys—Further fashion stress on rayon jerseys during 1937 was indicated at the Paris openings; open work weave or smooth reversible surface were featured, according to cables from Paris offices of Du Pont Style News Service.

•

Less Silk From Japan in 1936—Japan's raw silk exports to the United States declined 8.9% in quantity but rose 1.5% in value, as against 1935, according to Yokohama statement by the Japan Central Silk Association.

•

Watch Those Spun Rayon Shirtings!—Possibility that rayon may at last succeed in its long-cherished hope of entering the men's shirtings field is seen in the present effort to develop such fabrics from spun rayon.

•

Viscose Co. Changes Sales set-up—With the aim of broadening its distribution of Crown rayon, The Viscose Co. has created five departments; these, with executive heads follow: Viscose process rayon—W. B. Olmstead, Jr.; "Fibro" cut staple and imports—H. W. Rose; "Seraceta," acetate rayon—A. C. Werner; Advertising—J. A. Spooner; and credits—T. A. Caulfield.

•

Typewriter Ribbon of Bemberg—W. H. Mathews, general manager, typewriter division, Remington Rand, Inc., announces that, as result of five years' joint work by that firm and American Bemberg Corp., typewriter ribbons made of specially processed fine denier multi-filament Bemberg yarn have been developed. This, the first commercial use of synthetic yarn for such a purpose, is believed to open an important new market.

•

Throwsters Reelect Tynan—Henry J. Tynan, president, Throwsters Research Institute, was reelected, as were the Institute's other officers, at the board of governors' meeting last month.

•

1936 Brings Profit Rise—Continued improvement in the profit position of rayon yarn producers was indicated in two 1936 reports, details of which appear elsewhere in this issue. The reports, which showed a decidedly healthier position, were viewed in the market as indicative of the financial progress of the yarn industry as a whole.

•

Oscar Heineman, president of Oscar Heineman Corp., Chicago, announced an increase of 7½% in pay to all employees, both in the plant and the offices, to take effect March 8.

•

And Still the Family Grows—As additions to the list of suggestions for a name for rayon staple, Henry A. Wagner, Glen Riddle, Pa., offers **"Superay"** (pronounced Super-A) while Edgar S. Genstein, president Kem Products Co., Newark, N. J., thinks **"Rayple"** is "simple, phonetic, descriptive."

•

Fabrics Shipments Equal Output—January, 1937, deliveries of rayon broad woven cloth, while slightly below December, 1936, were about equal to January production, it is pointed out in figures issued jointly by the National Rayon Weavers Association and the National Federation of Textiles. Floods and the automotive strike were blamed for the slackening in sales. Index figures follow:

1934=100	Nov. 1936	Dec. 1936	Jan. 1937
Taffetas, Twills, Linings and Other Staples	324	307	281
Dress Goods, Novelties, and Other Fancies	130	110	111
Total	197	178	170

•

Rayon Staple was the subject of a round-table discussion led by J. Meierhans, of Farr Alpaca, and C. Scholer, of National Fabrics, held at March 3rd meeting of American Association of Textile Technologists, at Architectural League of New York.

•

Key silk prices and statistics follow:

Prices	Mar. 1, 1937	Feb. 1, 1937	Mar. 2, 1936	Mar. 1, 1935
Crack XX 13/15s white 78%	$1.82	$2.05	$1.72½	$1.42½
Tram, 5thd Japan 85%	2.83	2.88	2.38	2.30
Tram Crack XX 78%	2.57	2.62	2.25	2.05
60s-2, spun silk	3.05	3.05	2.90	2.75

Statistics	Imports	Approx. deliveries	Stocks at warehouses
Feb. 1937	37,348	38,484	49,408
Jan. 1937	50,328	44,198	50,544
Dec. 1936	41,627	45,328	44,414

•

Key rayon prices and statistics follow:

Prices	Mar. 1, 1937	Feb. 1, 1937	Mar. 2, 1936	Mar. 1, 1935
Viscose process				
75 denier (18–30 fils.)	$0.90	$0.90	$0.90	$0.92
100 denier (40 fils.)	.79	.79	.79	.80
150 denier (40 fils.)	.60	.60	.57	.60
Acetate process				
150 denier	.60	.60	.60	68½
Cupra. process				
150 denier (112 fils.)	.65	.65	.65	.70
Rayon staple 1½, 3 and 5½ denier	.28	.28	Not quoted	Not quoted

Indices of Deliveries ***

Month	Feb.	Jan.	Dec.
In year 1937	549	537	.....
In year 1936	517	477	562

*Rayon Organon.
**Exclusive of Acetate. Daily average 1923–25 = 100

Rayon & Silk
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TEXTILE WORLD'S

Knit Goods Digest

THE Hosiery Industry Conference held last month was everything such a conference should be. Its carefully prepared agenda, including a list of the general topics to be discussed as well as the important questions which would arise under each topic, stimulated thought in advance, and therefore produced excellent results in the form of conclusions. The coordination of the efforts of all the groups within the industry, including a dinner given to the directors of all the associations, made it truly an industry-wide conference. Those who planned it should be proud of their work.—*Editor.*

Two Minutes—Then Rosedale Rests—After two minutes of testimony by a single witness Rosedale Knitting Co. concluded its Federal anti-trust case against Julius Kayser & Co., etc., in the "ringless" hosiery patent controversy, in Philadelphia, March 1. The plaintiff's case, which is a counter-suit to the infringement action already tried, was based mainly on documentary evidence introduced during the first trial. The defense in the anti-trust case opened its side March 2, and devoted only one day to its presentation. Joseph G. Denny counsel for the "ringless" patent pool group was in charge of the defense and he relied mainly on documentary material which already had been introduced in the previous infringement action.

•

"Sit-Down" Strike Hits Reading—Demanding that all hosiery mills in Reading, Pa. support the American Federation of Hosiery Workers in its protracted strike against Berkshire Knitting Mills, the union called a general hosiery strike in that city March 1. By March 2, production had been halted in 7 mills, employing 2,150. Among mills affected by the strike, which was of the "sit-down" type, were the Womelsdorf mill of Nolde & Horst Co., Oakbrook Hosiery Mills, Busy Bee Hosiery Co., and Laurel Hosiery Mills. Market observers were of the opinion that the strike would serve to strengthen prices, if prolonged. Ten days previously, 17 Reading mills had issued a joint statement promising not to cut wages.

•

See Capacity Output for 1937—Forecasts that hosiery output this year would reach capacity for the first time since 1928 were made last month by leading manufacturers in Philadelphia and the South. (These opinions were expressed prior to the Reading, Pa. strike) The forecasts were based on the fact that January, usually a slow month, showed no let-up in shipments. The guess was that 1937 output would reach 40,000,000 doz. pr.

•

Hosiery Prices Easier — February brought a slight easing of hosiery prices which showed itself in minor concessions to buyers. It was attributed to a let-up in demand from outlets which had covered very heavily in January.

•

Hosiery Yarn Study Starts—Following recommendations made by the National Association of Hosiery Manufacturers, the Mercerizers Association has started a study of the breaking strength and stretch of mercerized cotton yarns, it is announced. The study is being made by the Mercerizers' Association's research staff at the National Bureau of Standards.

•

Plan Outerwear Unionization Drive—Plans for a campaign to unionize the knitted outerwear industry are under way, it was stated March 1 by Louis Nelson, manager Knit Goods Joint Council, New York. He said the three major problems facing the union in outerwear are: (a) machine improvements which increase unemployment, (b) the increasing importance of the jobber, and (c) the "open shop" mills; he added that all of these factors would be taken into consideration in the union's projected campaign.

•

Japan's Export Curtailment Program—Yokohama dispatches last month indictated that Japan's curtailment of hosiery exports to the United States will operate through a seven-ply program. This program, which will be enforced by the Japan Knitted Goods Export Association, excepts wool and silk hosiery from its provisions, but strictly limits cotton hosiery to the 2,000,000 doz. pr. allotment plan already announced.

•

Form Institute Glove Group—Formation of a Fabric Dress Glove Manufacturers Group of the Underwear Institute was announced Feb. 17, following a meeting of 20 manufacturers in New York. I. K. Hessberg, president, The Van Raalte Co., was elected chairman; other founders were Hans Meinig,, of E. Richard Meinig Co., and Elias Breath of Picardy Mills. H. L. Van Praag, of Julius Kayser & Co., and Roy A. Cheney, managing director, Underwear Institute, spoke.

•

Profits for Workers — National Knitted Outerwear Association in distributing to its members reprints of an article on profit-sharing plans and other forms of employee compensation; the article appeared recently in "Nation's Business."

"Chiffon-Weight" Knitted Dresses—Outerwear knitters are watching with interest market reaction to a line of chiffon-weight knitted fabrics now being actively promoted for tailored sportswear manufacture. The fabrics are said to be exceptionally sheer and suitable for mid-summer wear.

•

Silk Guild Ad Stresses Hosiery—Hosiery was highlighted as a product of the silk-worm in an interesting advertisement by the International Silk Guild in the February issue of the Bulletin of the National Retail Dry Goods Association. The copy used the word "silk" as a border, and emphasized the quality of hosiery made of silk.

•

Synthetic Wools in Underwear?—In view of increasing attention being given artificial wools, such as Lanital, Underwear Institute last month queried importers and domestic producers handling such products as to suitability of these yarns for underwear. Institute reports that answers showed these fibers are not yet ready for use in the underwear field.

•

Too Many Cooks?—The sharp increase recently in the number of mills making knitted beach wear is causing worry as to whether this influx may result in cut-throat competition which would be unprofitable to all concerned, during the current season. New firms are lured to beach wear because such garments have "one-season" life, thus permitting better sales, it is stated.

•

Hosiery Sales Up 16%—January 1937 hosiery shipments totalled 9,845,400 doz. pr., or 16% above the January 1936 figure, the National Association of Hosiery Manufacturers announced March 11. The chief gains were in anklets 28%, and women's seamless excluding wool, 24.6%. In the twelve months ending with January, 1937, stocks turned over 6.3% against 5.9% in the previous twelve months. Shipments of women's full-fashioned, ribbed goods and woolen goods showed their seasonal decline.

Knit Goods

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TEXTILE WORLD'S

Processing Digest

IN view of the current agitation in favor of fiber identification and proper labeling and advertising of textiles, it appears that now is an opportune time for the various branches of the industry to promote the sales of yarns and fabrics carrying guarantees as to their color fastness. At present, various individual companies are featuring fast-dyed textiles, but the industry as a whole is doing little or nothing to popularize such materials. Some seven or eight years ago the cotton finishers' association set up standards for fastness and issued tags to its members to be attached to goods which met those standards. A revival of this idea and its adoption by other textile associations seem to be well worth consideration as a means for securing consumer good will and increasing sales.—*Editor.*

Processing Rayon Staple—Dr. F. Bonnet, of the Viscose Co., discussed the manufacture of rayon staple and the dyeing and finishing of fabrics made from this fiber at the February meeting of the New York Section, A.A.T.C.C., held Feb. 26, at the Swiss-Chalet, Rochelle Park, N. J. Dr. Bonnet described briefly the manufacture of rayon staple by the wet and dry methods and reviewed the properties of yarns and fabrics manufactured from this material. At the present time, according to Dr. Bonnet, the chief use for staple rayon is in cotton mills for weaving linen-like materials; rayon staple fabrics, he stated, are rapidly gaining favor for use in summer suitings for both men and women. Recent investigations show that some of the fast but unlevel-dyeing colors can be made to yield level dyeings by careful control of additions of salt to the dyebath. In finishing, synthetic resins of the water-soluble type are being employed extensively for giving the fabrics a crush-resistant finish and for imparting a wool-like appearance and handle.

•

Canadian Chemists—The second annual meeting of the Ontario Section of the Canadian Association of Textile Chemists and Colorists was held in Hamilton, Ontario, Feb. 6. Dr. Robert E. Rose, director, Technical Laboratory, E. I. du Pont de Nemours & Co., Wilmington, Del. was the principal guest speaker. The following officers were elected for 1937: honorary president, Robert Bain; president, Robert Buchanan; vice-president, Albert Freeman; secretary-treasurer, R. W. Graham.

•

Mid-Winter Meeting—Of the southeastern section A.A.T.C.C. was held in Columbus, Ga. February 13. Speakers were G. W. Cox, International Nickel Co. on the subject "Research Paves the Way"; and Sidney Edelstein, A.A.T.C.C. research fellow, on "Mercerizing Research." The motion picture "Colloidized Vat Dyes," first shown at the annual meeting of the association in Providence, was again presented, together with a paper by R. H. Kienle, of Calco Chemical Co., on the application of this type of vat dyes.

•

Sweet Potato Starch—Approximately 42,000 bushels of sweet potatoes were processed last year, with an average yield of 10 lb. of starch per bushel, according to a recent announcement by the U. S. Dept. of Agriculture. It is reported that several large cotton mills are using sweet potato starch by the ton for warp sizing, approximately 250,000 lb. of the starch having been sold to one mill. Cost of production at the trial plant Laurel, Mississippi, has now been cut to 3c. per lb. it is reported, and improved methods are expected to increase starch yield to 11 or 12 lb. per bushel.

•

Shrinkage Conference—A trade-practice conference was held under the auspices of the Federal Trade Commission, at the Hotel Astor, New York, March 9, for the purpose of adopting trade-practice rules concerning the proper designation and representation to be used in describing the shrinkage properties or the pre-shrunk character of woven cotton yard goods. All groups represented at the conference affirmed their desire to set up workable rules and to give the purchaser as full information as possible regarding the amount of shrinkage to be expected in cotton fabrics. However, the trade-practice rules proposed by Dr. M. Leo Gitelson, chairman of the Textile Shrinkage Conference, of the New York Board of Trade, met with strong opposition from the job finishers, who maintained that, due to variables in gray goods, it is not practicable to guarantee that shrinkage of any given piece in a lot will not exceed the average shrinkage of the lot as determined by the tests advocated. Henry Miller, of the Federal Trade Commission, presided at the conference. He stated that the Commission will study the original proposal made by Dr. Gitelson, together with the various substitute plans and amendments suggested at the conference, and will then publish a set of tentative trade-practice rules, which will be released to all interested parties for consideration and criticism.

•

Net Loss—For a group of 65 silk and rayon dyeing and finishing companies an average net loss of 3.03% on their textile investments for the first six months of 1936 is reported by the Federal Trade Commission. This compares with a net loss of 7% for 71 such companies for the last half of 1935, and a net loss of 4.63% for 62 companies for the first half of 1935. Of the total mill cost of goods processed by this group during the first six months of 1936, cost of labor represented nearly 38%; cost of dyes, chemicals, and raw materials, about 31%.

•

Chemical Exposition—The Sixteenth Exposition of Chemical Industries will be held at Grand Central Palace, New York, December 6 to 11, 1937. Three floors of Grand Central Palace have been reserved, and advanced leasings to date indicate that the 1937 exposition will be the largest in recent years.

One of the series of American Indian prints now being featured by Mallinson Fabrics Corp., of Crown-Tested rayon fabrics made from Viscose Co. yarn. Other prints in the series show the head dress of the Crow Indian, the symbols of the Navajo tribe, the Sioux war bonnet, Comanche feathers, and other symbols of the American Indians.

Processing

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TEXTILE WORLD'S

Engineering Digest

AS a refreshing contrast to so many of the ballyhoo contests which are used for the promotion of consumer products is the award of $200,000 established by the James F. Lincoln Arc Welding Foundation. The prizes should not only stimulate intensive study of arc welding but should in their broad effect represent a contribution to technological development. As textiles represent one of the sub-classifications in the division of industrial machinery set up in the terms of the award, the contest will be of keen interest to readers of this publication.—*Editor.*

Be Safe—Approximately 228 North Carolina textile mills will compete in the second state-wide safety contest sponsored by the Cotton Manufacturers Association of North Carolina in cooperation with the North Carolina Industrial Commission, according to Hunter Marshal, secretary. Only 171 plants participated last year. Silver trophies will be awarded to winners in several groups which operate the greatest number of man-hours with no lost-time accidents. The four groups include: (1) plants with 200 employees or less, (2) plants with 201 to 400 employees, (3) plants with 401 to 750 employees, (4) plants with 751 or more employees.

•

Power Conference—February meeting, at Chicago, of the National Power Conference had for its theme, "Power and its Application in Industrial Plants." Presiding at the several sessions were, W. L. Abbott, president of the conference, Frank D. Chase, C. C. Wilcox, and Milton Hartmen. Subjects discussed were the generation, distribution, and application of power. Other important meetings are scheduled for April, May, June, and September. The objects of the conference are: (1) to acquaint the public in the progress of power engineering, (2) to broaden the usefulness of the power-engineering profession and power throughout the country, (3) to advance the standards of power engineering, and (4) to promote the intercourse and cooperation of engineering associations, societies, engineers, and others interested in power for their benefit.

•

Alloy Steels—H. J. French, in charge of alloy-steel and iron development for International Nickel Co., recently addressed the Worcester meeting of the American Society for Metals held at Worcester Polytechnic Institute, Worcester, Mass. Lantern slides were used to illustrate his talk, which covered the more interesting phases of the year's progress in the manufacture, selection, and utilization of alloy steels.

•

More Safety—Robert R. West, president of Riverside & Dan River Cotton Mills, Danville, Va., as toastmaster at the third annual safety banquet, sponsored by the company, announced that less time was lost by employees because of accidents during 1936 than during the previous year, although 800 names had been added to the payroll. For the last several months a continuous competitive effort has been made to further reduce accidents, with the result that of 143 departments, 124 registered a 100% record. One or more accidents prevented the remaining nineteen departments from showing a perfect record.

•

Arc Welding Prize—James F. Lincoln Arc Welding Foundation has announced one of the richest awards ever established for competition in the field of mechanical science. A sum of $200,000 will be distributed as awards for papers dealing with the use of arc welding in various branches of industry. One branch is industrial machinery. Papers must be on file with the secretary of the Foundation not later than June 1, 1938, and prospective entrants should communicate promptly with the foundation secretary, A. F. Davis, P.O. Box 5728, Cleveland, Ohio, for complete rules and details. The principal prize winner in this contest will receive not less than $13,700.

•

Conveyor—Filling boxes 17x26 in., 14 in. deep, and each weighing about 64 lb. are being handled over an inclined belt conveyor 200 ft. long, with difference in elevation of 15 ft. between ends of conveyor, according to a recent item in *Link-Belt News.* The conveyor, which has a capacity of 150 boxes an hour when run steadily, can be controlled for intermittent operation by means of conveniently placed push-buttons. Full boxes are carried in one direction and empties returned. Loading is by hand, unloading automatic. Conveyor is housed in steel structure sheathed with corrugated galvanized iron, with footwalk the entire length. (See illustration)

Light—Samuel G. Hibben, lighting expert of the Westinghouse Research Laboratories, Bloomfield, N. J., spoke before an audience of mill executives, students, and others interested in the subject of modern lighting, Wednesday evening, Feb. 24, at Greenville, S. C. Using equipment brought from the laboratories, Mr. Hibben produced light of various colors and qualities, demonstrating the effect on the individual.

•

Young Engineers—was the subject of an interesting address by A. M. MacCutcheon, vice-pres. of Reliance Electric & Engineering Co., Cleveland, Ohio, before the Engineers Club, of Birmingham, Ala., Friday, Feb. 25. The meeting was arranged by the Engineers Club, cooperating with the local section of the American Institute of Electrical Engineers, of which Mr. MacCutcheon is president. Integrity, dependability, resourcefulness, forcefulness, adaptability, diplomacy, friendliness, broadmindedness, and knowledge are the qualities sought by the employers of young engineers. Of all these, he said, knowledge is the most easily replaced.

•

Instruments Valuable in Survey—An instrument-conducted survey of plant electrical conditions is extremely valuable, according to R. C. Hodges, electrical engineer of Titanium Pigment Co., Sayreville, N. J. Making load tests on 800 motors in 40 different departments, his findings helped greatly in keeping the plant operating on schedule and in laying out plans for new equipment in anticipation of an expansion. About 90 per cent of the tests were made without breaking circuits. Instruments included two ammeters, a voltmeter, a volt-ammeter, a recording ammeter, and two transformers.

Engineering

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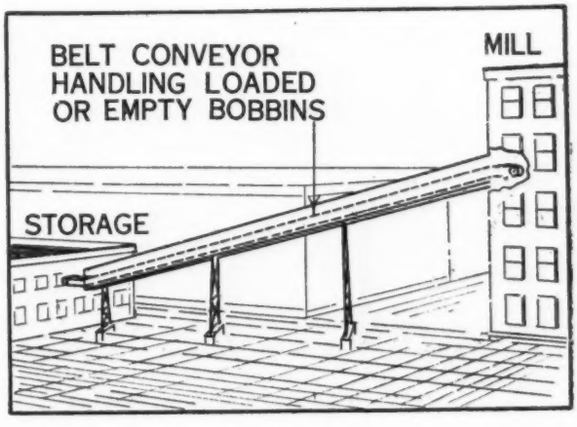

Fully inclosed inclined belt conveyor supported on and between buildings solved transportation problem at this mill.

Mill News

Cotton Mill News

Cartersville (Ga.) Mills, Inc., are erecting an addition 48x60 ft. Eugene Smith is in charge of the work.

Pepperell Mfg. Co., Lindale, Ga., have had their dry cans re-covered with copper by the Textile Shop of Spartanburg, S. C. This included 31 cans.

Monroe (Ga.) **Cotton Mills** are replacing 11,000 spindles with Whitin long draft machinery.

West Point (Ga.) **Mfg. Co.** has work nearing completion on one-story addition to branch mill at Shawmut, Ala., 41x70 ft., to be equipped as a testing laboratory.

Rockland (Mass.) **Webbing Co.** has filed plans for alterations and a mill addition. J. William Beal Sons, Boston, prepared the plans.

Namasket Co., organized by local interests, has taken over mill No. 3, central division from Amoskeag Industries, Inc., Manchester, N. H., and will operate it on fine, fancy, cottons. T. A. Hagan, formerly Amoskeag's general production superintendent, is president; P. H. See, also an Amoskeag official will be treasurer. The mill will operate 500 looms beginning next month.

Asheville, (N. C.), **Cotton Mills** will build a $15,000 two-story brick addition and modernize the entire plant. New machinery will be purchased and equipment installed for Sanforizing fabrics. Sidney S. Paine, of Greensboro, N. C., is president.

Bladenboro, (N. C.), **Cotton Mills** have installed new machinery including long draft spinning, new cards, new winders and a new warper.

Gaston Mfg. Co., Cherryville, N. C., has resumed operations under the management of W. J. Woods, who has leased the plant. The company is capitalized at $250,000. The mill is equipped with 12,000 spindles, and will employ about 100 persons, according to Mr. Woods.

Queen Anne Mills Co., Ellensboro, N. C., recently formed with capital of $100,000, will make improvements in former mill of Ellensboro Mfg. Co., and will begin operations at early date. W. E. Mason, Greenville, S. C., and R. C. McCall, Liberty, N. C., head the new company.

Randolph Mills, Inc., Franklinville, N. C., is constructing a new 18x75 ft. dyehouse at Mill No. 2.

Ragan Spinning Co., Gastonia, N. C., has awarded general contract to A. H. Guion & Co., Charlotte, N. C., for one-story mill addition, 135x200 ft.; cost close to $150,000. H. V. Biberstein, Charlotte, is architect.

Cross Cotton Mills Co., Marion, N. C., is erecting an extension to the cardroom, 29x33 ft., and an extension to the picker room, 19x80 ft., and will increase production by 20%.

Woodlawn Mill, Mount Holly, N. C., announces the erection of a new 80-ft. addition. New cards and spindles will be installed.

Patterson Mills Co., Roanoke Rapids, N. C., and **Marshall Field & Co.**, Bedspread Mill, Leaksville, N. C., are having the Textile Shop, Spartanburg, S. C., install its "No Drip" slasher exhaust system on their slashers.

Marshall Field & Co., Spray, N. C., is soon to build a filter plant of 4,000,000 gal. daily capacity.

Beacon Mfg. Co., Swannanoa, N. C., will carry out an expansion program at mill of Oconee Textiles, Inc., Westminster, S. C., recently purchased, to be used in future as a yarn mill with 21,000 spindles. New machinery will be installed and the looms moved elsewhere.

Anderson (S. C.) **Cotton Mills** will be renovated and modernized in the near future at an expenditure of from $500,000 to $1,000,000. New machinery will replace all that is out of date, and general improvements will be made. J. P. Abney and associates, of Greenwood, S. C., recently acquired controlling interest in the mills. James M. Cathcart is vice-president and general manager of the mill.

Gossett Mills, Anderson, S. C., have work under way on addition, to be used for expansion in offices and operating division, estimated to cost close to $25,000.

Lydia Cotton Mills, Clinton, S. C., has invested $250,000 in putting the mill in first-class condition and enlarging it. The company expects to install 403 additional 40-in. Model "E" Draper looms, making a total of 1,208 looms. Spindles will be increased to about 50,000.

Clover (S. C.) **Spinning Mills**, recently organized with capital of $100,000, will take over local plant of Clover Mills Co., in receivership, and will place in operation. Mill will be remodeled, and equipment installed. New company is headed by J. C. Cloniger, general manager, Neely Cotton Mills, York, S. C.; and J. M. Spratt, York.

Riverdale Mills, Enoree, S. C., have awarded general contract to Potter & Shackelford, Greenville, S. C., for one-story addition; to cost over $30,000.

Gaffney (S. C.) **Mfg. Co.** has had its size kettles and size vats lined with copper, the Textile Shop in Spartanburg, S. C., doing the work.

Joanna Cotton Mills, Goldville, S. C., have awarded general contract to the Fiske-Carter Construction Co., Spartanburg, S. C., for one-story addition to accommodate additional looms. J. E. Sirrine & Co., Greenville, S. C., are architects and engineers.

Springs Cotton Mills, Lancaster, S. C., plant, has had their 7-foot slasher cylinders re-covered with copper.

Western Shade Cloth Mills, Goldville, S. C., have awarded contract for a two-story addition, 75x250 ft., to house the picker room and other operations. Present picker room will be used for additional looms.

Victoria Cotton Mills, Rock Hill, S. C., **Ninety-Six** (S. C.) **Cotton Mills** and **Dallas Mfg. Co.**, Huntsville, Ala., are having their machinery overhauled with the Guillet Overhauling System, by Dixie Spindle & Flyer Co., Charlotte, N. C.

Berk Lace & Braid Mfg. Co., Providence, R. I., has plans for new one-story addition, and improvements in present plan; cost about $45,000. L. Marcello, Maplewood Ave., Cranston, R. I., is architect.

Cotton Financial Notes

Powdrell & Alexander, Inc., Danielson, Conn., is arranging for a new stock issue to total about $557,800, considerable portion of proceeds to be used for the purchase of new equipment for mills.

Monroe (Ga.) **Cotton Mills** have begun an improvement and modernization program at mill.

Strain Mfg. Co., Rome, Ga., had its plant and machinery damaged about $15,500, by a severe wind and rain storm on Feb. 9.

Sudbury Yarns, Inc., Boston, Mass., has been chartered with capital of $40,000, to operate a mill. D. B. Barbour, Framingham Center, Mass., is president and treasurer.

D. Mackintosh & Sons, Holyoke, Mass., has been granted a $85,000 RFA loan.

Bedford Textile Co., Lowell, Mass., wool nubs, is in hands of G. W. Brown of Draper & Co., Boston, as receiver.

Grinnell Mfg. Co., New Bedford, Mass., has sold land, buildings and machinery to William Rocklin. Company is in liquidation.

Pierce Bros., Ltd., New Bedford, Mass., have resumed operations after two years' idleness. Plant operates 50,000 spindles and 1,181 looms and will employ 300 workers on combed yarn fabrics of plain weave as in the past. Fred W. Steele, formerly general manager of the Grinnell Mfg. Co., is in charge of operations.

Manchester (N. H.) **Division of Pacific Mills** is about to open the last unit, the Langdon mill, in the northern division of the former Amoskeag property on gray goods for finishing at the Lawrence (Mass.) Division.

Norman Bisanar has purchased the Viewmont Mill at Hickory, N. C., from Clinton Madaris.

Phenix Mill, Kings Mountain, N. C., recently purchased the Dilling Mill which it operates as Phenix Mill No. 2. The original Phenix Mill continues to spin and weave print cloths; at unit No. 2 sale yarns are spun.

Kingston (N. C.) **Cotton Mills**, which took over Caswell Mills, Inc., has been reorganized with the following officers: L. M. Carpenter, of Spartanburg, S. C., president; C. S. Smart, of Concord, vice-president; and T. S. Maynard, secretary.

Capitola Mfg. Co., Marshall, N. C., is arranging for early resumption of operations at local cotton mill, closed for about five years.

Wilbur Cotton Mills, Troy, N. C., closed for four years, have re-opened. after having had the equipment put into excellent condition.

Capelsie Cotton Mills, Troy, N. C., recently purchased by Leon Capel of Troy, was put into operation early in this month on manufacture of yarn.

Standard Mill Supply Co., Providence, R. I., has purchased the plant of Everlastik, Inc., in Pawtucket.

Character Spreads, Inc., Sumter, S. C., was recently organized to operate a local mill; R. M. Warren is president; H. F. Jones, vice-president; and G. C. Warren, secretary and treasurer.

Riverside & Dan River Cotton Mills, Danville, Va., authorized issuance of additional 300,000 shares of $25 par value preferred stock bringing total capital to $22,500,000. The new stock is to be offered four for one to holders of preferred stock. After the March 15 dividend there is still in arrears only $3.00 due on the preferred, but the exchange will be made only after all accrued dividends, with interest, are paid.

Delano Spinning Mills, Etowah, Tenn., idle for some time, are reported to have resumed operations. The mills, formerly Prendergast Cotton Mills, and later Alpha Spinning Mills, have been incorporated with a capitalization of $35,000. Hoyt Lillard is president; B. E. Biggs, vice-president; and Dorsey Lillard, general manager.

Wool Mill News

Beacon Textile Mills, Inc., Beacon Falls, Conn., is starting construction of a mill in the Pinesbridge section of the town, near the main Naugatuck Valley road. Incorporators of the company are G. H. Kuss, P. D. Chamberlain and C. M. P. Lund, all of Seymour.

Yale (Mich.) **Woolen Mills** have completed their new mill, with large window area, built by the Austin Co. All machinery is on one floor. New machinery includes four sets of Davis & Furber cards with Davis & Furber tape condensers, and additional looms.

Kafelt Mfg. Co. is building a small addition to plant on upper Washington street, Keene, N. H.

Princeton Worsted Mill, Inc., Trenton, N. J., has filed plans for new addition to mill, and will proceed with superstructure at once. It will be equipped with battery of 48 new C. & K. automatic looms and other machinery, including three monel dye kettles and a new water softener. Cost over $75,000. Plant will operate 208 looms and 6 dye kettles.

Chatham Mfg. Co., Elkin, N. C., has let general contract to Frank L. Blum Co., Winston-Salem, N. C., for one-story addition to mill and will proceed with erection at once; to cost $35,000, and to increase production 15%.

Karastan Rug Mill of Marshall Field & Co., Leaksville, N. C., is erecting a 54x96 ft. addition, costing $15,000.

Thomas Barron, Jr., formerly with Barron Mills, Brigham, Utah, has established a $75,000 woolen mill in Magrath, Alberta. Local wool will be made into blankets and heavy woolens. Plant will employ about 40.

Flesherton (Ont.) **Woolen Mills** plan early rebuilding of portion of mill recently damaged by fire, with loss estimated close to $20,000.

Wool Financial Notes

Maclan Hat Co., Danbury, Conn., has bought the old woolen mill in East Brookfield, Mass., and has remodeled it for hat manufacture.

Rindge Woolen Co., Windham, Me., mill has been acquired by the Windham Realty Co., Windham recently organized, and will be remodeled and improved for leasing to different interests.

Mill News

Sprague Specialties Co. has purchased the Hoosac Worsted Mill, North Adams, Mass., idle since 1929, to provide space for future expansion.

Union Mills, Mechanicville, N. Y., may be sold to a New York City firm manufacturing woolen yarns in the near future.

Franklinshire Worsted Mills have been established at Westmoreland and 3rd Sts., Philadelphia, Pa., by Benjamin F. Miller, Herbert H. Miller and Alfred S. Miller.

Windsor Mfg. Co. has been organized in Philadelphia, Pa., with headquarters at Jasper & Butler Sts., to manufacture and deal in wool and woolen products. Principals of the firm are John Oughton; Robert Oughton; Bertram E. Oughton, and Charles T. Oughton.

Bridgewater (Vt.) Woolen Co., in hands of Robert M. Sharpe, receiver, made a net gain of $22,222 in the last quarter of 1936.

Rayon & Silk Mill News

Central Falls (N.C.) Mfg. Co. is erecting a new one-story, brick-and-steel, 25,000-sq. ft. addition to its plant. Charles W. Angle, of Greensboro, N. C., is the contractor.

Marshall Field & Co. will move equipment of their velour plant at Philadelphia, involving 13 broad looms, to Leaksville, N. C., to be installed in the former warehouse of the Leaksville Bed Spread mill.

Industrial Rayon Corp., Painesville, Ohio, new plant will be equipped with spinning machinery bought from Rayon Machinery Corp., Lakewood, Ohio, a wholly owned subsidiary. Hard rubber pans will be purchased from American Hard Rubber Co., Akron, Ohio; cone winders from Universal Winding Co., Boston; three turbo-generators and other equipment from Westinghouse Electric & Mfg. Co., East Pittsburgh.

Savoy Silk Corp., Altoona, Pa., recently organized, has established a local mill. Charles M. Muench is president; Joseph Cohn is secretary and treasurer.

West Branch Silk Co., Newbury, Pa., damaged by flood in March, 1936, and unoccupied since that time, is to be reconditioned for starting up.

Southern Silk Mill, Spring City, Tenn., which began a series of expansions late in 1936, completed these projects early in March. Included are two buildings, for power-house and fuel storage. The company has acquired a tract of land near plant and will use for future expansion.

Frank Ix & Sons, Inc., Charlottesville, Va., have purchased plant and machinery of Sauquoit Silk Mfg. Co., Bethlehem, Pa. Mill has 350 looms of which about half are automatic. New owners will retain only the automatics for operation here. Charles Ix, formerly manager of the company's Westerly, R. I., plant, will be in charge. The company, founded by Frank Ix in 1918, is headed by him and associated with him are five sons. Plants at North Bergen, N. J., New Holland, Pa., Bethlehem, Pa., and Charlottesville, Va., are operated, totaling with the new purchase 1,350 looms with spinning and throwing machinery.

Aberfoyle Inc., Norfolk, Va., recently organized with capital of $1,000,000 as an interest of the Aberfoyle Mfg. Co., Chester, Pa., has taken over the former mill of the Norfolk Weavers, Inc., and will remodel for throwing, warping and weaving of rayon fabrics. New machinery will be installed. Entire project will cost over $500,000. Company has also acquired adjoining land for future expansion. Edwin Lord, general manager of parent company, will be president of new organization; G. W. Herrick is treasurer; and William T. Galey, secretary.

Viscose Corp. of Virginia, Roanoke, Va., has awarded contracts for structural steel framing for initial units of new mill at Front Royal, Va., to the Bethlehem (Pa.) Steel Co., and Belmont Iron Works, Philadelphia.

Rayon & Silk Financial Notes

Cycan Silk Co. has moved its plant back to Middletown, Conn., from New Jersey, reoccupying two units of its former mill. About 20 looms have been set up.

Cannel Silk Co., Paterson, N. J., has been chartered to operate a local mill. New company is headed by Samuel Cannel, 234 Eighteenth Ave., Paterson.

Danta Silk Co., Paterson, N. J., has been organized to operate a local broad silk mill; represented by Julius Goldberg, 262 Main St., Paterson, attorney.

Rembrandt Fabrics, Inc., Paterson, N. J., have been organized to operate a local silk and rayon mill; represented by Mendon Merrill, 45 Church St., Paterson, attorney.

Kingsboro Silk Mills, Inc., Gloversville, N. Y., is completing plans to open a new $60,000 mill in one of the southern States. A. H. Rogers is president, and Paul Quick, vice-president and general manager.

Belding Heminway Co., New York, N. Y., has resumed ownership of mills at Northampton, Mass., heretofore occupied by College Weavers, Inc., and at Haydenville, Mass., occupied by College Throwsters of Haydenville, Inc., following bankruptcy petitions of the last two companies.

Watertown (N. Y.) Industries, Inc., is negotiating with the Capitol Silk Corp., of New York, for establishing of a plant at Watertown.

Cleveland Cloth Mills, Shelby, N. C., is running 20 looms on necktie fabrics, production being calculated as equivalent to 100,000 neckties per week. Fabrics are being woven double width.

Maxwell Textile Co., Inc., Allentown, Pa., headed by Irving Hyman, is concluding negotiations with Municipal Board of Finance, Paterson, N. J., for suitable mill building.

Cleveland (Tenn.) Silk Mills, Inc., has begun operations. E. E. Pickard organized the new company.

Atlas Silk Mill of Virginia, Inc., Martinsville, Va., has resumed operations following a shutdown since last June. C. P. Mason, acting superintendent, said 48 looms would be operated on two shifts.

Laurentian Silk Mills, Ltd., recently formed has acquired the silk and rayon plant and equipment at Cap-de-Madeleine, Que., formerly operated by Canadian T. S. R. of Lyons, Ltd. The new owners will start production on the 100 looms this month.

Knitting Mill News

Cooper Wells & Co., Decatur, Ala., has erected an addition to its plant at a cost of $15,000.

Cartersville (Ga.) Mills, Inc., have purchased 25 additional machines for installation.

Wolverine Knitting Mills, Bay City, Mich., have awarded general contract to Henry C. Weber Construction Co., Bay City, for one-story steel and concrete addition, 100x150 ft., to cost over $60,000.

Columbine Knitting Mills, Inc., Columbia, Miss., have approved plans for one-story addition to mill, designed to double present capacity; cost estimated over $55,000.

Laurel, Miss.—A local industrial school has installed 24 f.f. hosiery machines.

Wiggin Gilman, Franklin, N. H., who started a small hosiery mill with six automatic knitting machines two years ago, is expanding with the addition of 40 more machines. Mr. Gilman produces cotton stockings to retail at 10 and 15¢.

Pequest Hosiery Mills, Inc., Belvidere, N. J., are installing three Einsiedel-Reiner high-speed full-fashioned hosiery machines, equipped with the latest attachments.

Holly Hosiery Mills, Mount Holly, N. J., recently installed two more Einsiedel-Reiner high-speed leggers to augment their regular Einsiedel-Reiner equipment.

Gouverneur (N. Y.) Hosiery Mills, a new concern, are installing 23 machines formerly part of the Philadelphia branch of the Windsor Hosiery Co.

Sinclair Knitting Mills, New York, bathing suits, has leased an additional floor at 721 Broadway for expansion.

Foster Hosiery Mills, Burlington, N. C., have ordered five additional Einsiedel-Reiner high-speed full-fashioned hosiery machines to be installed.

Sellars Hosiery Mills, Inc., Burlington, N. C., has awarded contract for 96x108 ft. addition to Bryan & Bailiff, local contractors. Twelve f.f. knitting machines will be installed.

Rufus D. Wilson, Inc., Burlington, N. C., has ordered an additional Einsiedel-Reiner high-speed full-fashioned hosiery machine.

Chipman, Inc., East Flat Rock, N. C., has been chartered to manufacture hosiery by Charles Chipman, E. Brand Beacham and Harry E. Katzenmoyer. Construction of plant is already under way and operation is expected to begin March 1.

Glen Raven (N. C.) Knitting Mills, Inc., are installing two more Einsiedel-Reiner high-speed full-fashioned hosiery machines.

Juvenile Hosiery Mills, Inc., Greensboro, N. C., is scheduled to have the 65x100 ft. addition completed by April 15.

Goodman Hosiery Mill, Hickory, N. C., has work under way on establishment of a new mill, occupying a building owned by Brooks & Goodman.

D. P. Lutz, Lenoir, N. C., local furniture dealer, has begun erection of a one-story knitting mill for manufacture of children's socks, with about 18 machines with accessory equipment. T. Y. Ballenger will be manager.

Lincoln Knitting Mill, Maiden, N. C., has leased space in building at East Maiden, and will move there to increase production.

North State Hosiery Mills, Rockingham, N. C., a new full-fashioned hosiery mill, is controlled by W. B. Cole, president, and his family. C. M. Guest & Sons, Greensboro, N. C., have been awarded the contract for one-story 105x168 ft. building which will cost $50,000. Twenty 24-section machines will be installed, and operations are scheduled to begin Aug. 1.

Vanity Fair Silk Mills, Reading, Pa., is concluding arrangements with a recently formed realty corporation at Monroeville, Ala., for construction of new mill there, to be occupied under long-term lease as a branch mill; estimated to cost $50,000.

Union Knitting Mills, Inc., Schuylkill Haven, Pa., are erecting brick addition.

Palmetto Hosiery Co., newly organized mill at Laurens, S. C., will remodel building in which it will be housed.

James Hosiery Mill, Greensville, Tenn., has set up the initial equipment of fifteen full-fashioned hosiery machines. M. C. James, formerly with Bacon Hosiery Mills, Lenoir City, and his two sons, Guy and M. C., Jr., are the operators.

Fieldale (Va.) Mills women's full-fashioned hosiery plant of Marshall Field & So., formerly called the Torresdale Hosiery Mill, has begun the erection of an addition, costing about $30,000, to house new machinery.

Shorewood Mills, Milwaukee, Wis., has leased the former plant of the Kozy Komfort Shoe Co., Milwaukee, to expand operations in manufacture of men's and women's underwear.

Knitting Financial Notes

Blakely, Ga., is soon to have a new hosiery mill according to local reports.

Cartersville (Ga.) Mills have changed the name to the **"E-Z Mills of Georgia,"** John F. Fowler, president, has officially announced. The mill is owned by the E-Z Mills of New York.

Panama City, Florida, is soon to have a new hosiery plant established by Philadelphia interests. Thirty persons will be employed.

Baillis Knitting Mills, Inc., Palmer Mass., recently organized, have begun operations in part of the Otis Co. property. Considerable equipment was removed thither from West Warren, Mass.

Permanit Fabrics, Inc., Cadillac, Mich., have been organized to operate a local knitting mill. A new company is headed by Paul L. Walter, Cadillac.

Corinth (Miss.) Hosiery Mill is negotiating with municipality for purchase of mill building

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constructed by city about six years ago and on acquisition will continue expansion program.

Chester Knitting Mills, St. Louis, Mo.—R. R. Clabaugh, representing a bondholders' protective committee, has acquired the plant and property of this company at foreclosure for a stated consideration of $75,000.

Pal Knitting Mill, Clementon, N. J.—Machinery and equipment at this mill has been sold at public sale by Samuel T. Freeman & Co., auctioneers.

Town Maid Hosiery Co.. Inc., Hackettstown, N. J., has been organized to operate a local mill. Company is represented by James M. Murphy, Hackettstown.

Maple Shade (N. J.) **Hosiery Mills** have been purchased by Roxborough Knitting Mills, Philadelphia, and renamed Pertex Hosiery Mills, Inc.

Kingsboro Silk Mills, Inc., Gloversville, N. Y., have arranged for long-term lease of mill of the Richmond Hosiery Mills at Daisy, Tenn., and will improve and equip at once for new branch knitting mill, with finishing operations to be handled at other plants of company. About 12 knitting machines and auxiliary equipment will be installed.

Lake Mills Corp., Oswego, N. Y. has been formed to make rayon underwear by T. N. White, vice-president of Oswego Rayon Co.

Mor-Val Hosiery Mills, Inc., was chartered to manufacture and sell hosiery, at Denton, N. C. Subscribers are A. R. Morrin, Mary E. Morris, of Denton, and Owen Reese, of High Point, N. C.

Haynsworth Hosiery Mill, Inc., Connally Springs, N. C., has been chartered to manufacture and sell hosiery by J. R. Haynsworth, Rachel H. Haynsworth and J. E. Ewing.

Girard Knitting Mills have been organized in Philadelphia, Pa., with headquarters at 36 N. 3rd St. Principals are Morris M. Silver, Paul Silver and Sara Silver.

Radford Knitting Mills, Inc., Radford, Va., has been chartered to manufacture and sell hosiery and knit goods. Burns A. Robie, of Philadelphia, Pa., is president.

Knit Rite Hosiery Mill, Princeton, W. Va., has been bought by J. J. Griffith of Kermersville, N. C.

Holeproof Hosiery Co., Milwaukee, Wis., has acquired Champion Knitting Mills, Marietta, Ga., as reported, and facilities at Marietta are to be expanded, according to Felix Lowy, vice-president. The Champion mill comprises 600 seamless hosiery machines; a dye house; boarding and finishing equipment; 17 acres of land, and 15 tenant houses.

Processing Plant News

Lanett Bleachery & Dye Works, West Point, Ga., has awarded general contract to Batson-Cook Co., West Point, for five-story addition to branch mill at Lanett, Ala., 21x63 ft., estimated to cost over $70,000. Company has also let contract to same company for a second-story addition to machine shop at same mill, totaling about 8,000 sq. ft. floor space, to cost over $30,000. J. E. Sirrine & Co., Greenville, S. C., are architects and engineers.

North Shore Dye House, Inc., 164 Broadway Revere, Mass., has awarded general contract to Harry Lily, 39 Linwood St., Malden, Mass., for new two-story addition, 40x50 ft., to cost about $25,000. Meyer Louis, 73 Cornhill St., Boston, Mass., is architect.

Springfield Dyeing Co., Bordentown, N. J., recently formed with capital of $125,000, has taken over former local mill of Springfield Worsted Mills, Park St., idle for a number of years, and is placing in operation for new dye and finishing mill. Facilities will be installed for ultimate employment of about 250 persons. New company is affiliated with the B.&B. Co., Philadelphia, Pa.

Finco Dye & Print Works, Inc., has acquired seven buildings at Maspeth, L. I., and is remodeling for use. Four printing machines were running at end of February. The dye house will start next month.

Hanes Dye & Finishing Co., Winston-Salem, N. C., has approved plans for immediate erection of one-story addition to mill, estimated to cost close to $30,000, with equipment.

Armco Finishing Co., Burlington, N. C., has awarded general contract to Charles W. Angle,

Mill News

Inc., North Carolina Bank Bldg., Greensboro, N. C., for one-story mill, 60x300 ft., to cost $100,000, on large tract of land recently acquired near city limits.

Columbia Silk Dyeing Co., has been established at 1726 North Howard St., Philadelphia, Pa., under the management of Camill Peter, 7335 Tabor St.

Hartsville (S. C.), **Print & Dye Works,** reorganizing under Section 77-B, has secured permission from the Federal District Court to expend $34,643 for improvements and extensions in mill, the larger part of the fund to be used for purchase of equipment.

Processing Financial Notes

Hobart Dye Works, Inc., Los Angeles, Calif., has been formed with capital of $50,000, to take over and operate local company of same name, with plant at 5734 West Washington St. New company is headed by Charles Manig and Edward A. Karagozian, both of Los Angeles.

Safetex Co., Inc., Greenwich, Conn., will operate a local plant in the manufacture of rubber fabric and plastic coated materials with a starting capital of $20,000 paid in.

Arnold Print Works, North Adams, Mass.—Final hearing on reorganization plan under 77-B has been set by the U. S. District Court in Boston for Mar. 17.

Earnings Statements

The following summarizes recent mill financial statements showing 1936 net earnings compared with 1935. Date indicates end of fiscal year; where none is given it is same as calendar year; minus signs mean loss instead of profit.

	1936	1935
Cotton Mills		
B. B. & R. Knight Corp., Providence, R. I.	$210,607	—$2,096,952
Cosmos Imperial Mills, Ltd., Montreal	18,809	190,496
Pacific Mills, Lawrence, Mass.	956,191	—457,771
Soule Mill, New Bedford, Mass.	—8,835	—63,153
Pilgrim Mills, Fall River, Mass.	60,000	21,664
Palmer Bros. Co., New London, Conn.	36,105	—123,116
Saratoga-Victory Mills, New York.	51,487	—11,176
Standard – Coosa – Thatcher Co., Chattanooga (Sept. 30)	237,000	.....
Riverside & Dan River Cotton Mills, Danville	1,279,066	188,942
Cabot Mfg. Co., Boston	147,222	76,526
Neild Mfg. Co., New Bedford	14,029	—9,200
Mooresville (N. C.) Cotton Mills	108,500	.....
Wool Mills		
William Whitman Co., Inc., Boston	341,000	203,855
Bigelow – Sanford Carpet Co., Thompsonville, Conn.	1,672,447	416,260
Cleveland (Ohio) Worsted Mills Co.	139,968	92,020
Rayon and Silk Mills		
Tubize Chatillon Corp.	1,407,006	578,552
Celanese Corp. of America	4,406,993	4,057,227
Industrial Rayon Corp.	1,361,460	608,012
Sidney Blumenthal & Co.	521,848	610,215
Belding Heminway Co., New York.	563,095	542,536
Brighton Mills, Boston	55,633	—38,868
Belding-Corticelli, Ltd., Montreal	367,907	352,964
Riverside Silk Mills, Galt, Ont.	78,000	76,949
Newmarket Mfg. Co., Lowell	236,536	158,402
New Process Rayon, Gloucester City, N. J.	—13,789	.....
Knitting Mills		
Gotham Silk Hosiery Co., New York	405,651	423,809
Julius Kayser & Co., New York (last one-half year)	477,352	421,508
Bradley Knitting Co., Delavan, Wis.	121,012	195,615
Interstate Hosiery Mills, New York	440,263	277,404
Phoenix Hosiery Co., Milwaukee	53,000	291,147
Chipman Knitting Mills, West Easton, Pa.	4,166	37,488
Real Silk Hosiery Mills, Indianapolis	116,614	.....
Monarch Knitting Co., Ltd., Toronto	55,736	107,718
Holeproof Hosiery Co., Milwaukee.	—38,800	3,397
Wayne Knitting Mills, Fort Wayne, Ind.	178,522	86,443
Federal Knitting Mills Co., Cleveland	66,361	91,401

Textile Dyeing & Printing Co., of America, Inc., Fair Lawn, N. J., has given a $350,000 chattel mortgage to RFC to cover a loan of like amount.

Atlantic Print Works, Inc., Paterson, N. J., formed by former officials of Cretona Print & Dye Works, is in the hands of George Grabow as temporary receiver.

Driesen Processing Co., Paterson, N. J., has been organized with capital of $125,000, to operate a local dye and finishing mill. New company is represented by Mortimer L. Mahler, 66 Hamilton St., Paterson, attorney.

Lodi Novelty Printing Co., Passaic, N. J., has been formed to operate a local dye and print mills. New company is represented by Morris J. Janowsky, 624 Main Ave., Passaic.

Novelty Piece Dye Works, Paterson, N. J., is in hands of A. L. Kohlreiter, temporary receiver.

Ray Tex Dye Works, Paterson, N. J., assets have been sold by receiver to New York Credit Men's Ass'n., acting for certain creditors.

Majestic Textile Print Works, Inc., New York, N. Y., has been organized to operate a dye and print mill. New company is represented by B. Robbins, 25 Warrn St., New York.

Textile Printers, Inc., New York, N. Y., have been organized to operate a dye and print mill. Company is represented by Olivany, Eisner & Donnelly, 20 Exchange Place, New York, attorneys.

Eastern Piece Dye Works, Inc., Allentown, Pa., recently organized, is planning early operation of a local bleach, dye and finishing mill. New company is represented by Butz, Steckel & Rupp, Allentown, attorneys.

Hartsville (S. C.) **Print & Dye Works** in reorganization, has been authorized by the court to spend $34,643 on new machinery and equipment.

Southern Bleachery & Print Works, Taylors, S. C., reported a surplus of $577,683.85 at the end of 1936.

Miscellaneous Mill News

Linen Thread Co., Inc., Blue Mountain, Ala., is installing machinery which is being moved from the plants of the company at West Kennebunk, Me., where the plant is being dismantled.

Eureka Wadding Co., has leased the first floor of the Eureka mill in Truesdell street, Putnam, Conn., to make wadding for automobile cushions and upholstery. Alexander Smith of Hyde Park, Mass., is head of the new concern.

Keyes Fibre Co., Waterville, Me., reported a net profit of $9862 for 1936, compared with a net profit of $25,337 for the period from March, 1935, date of organization of present company, to Dec. 31, 1935.

Bibb Mfg. Co., Covington, Ga., is having an addition built to the Porterdale twine mill, to handle increased business.

Rockland (Mass.) **Webbing Co.,** has preliminary plans under consideration for new one-story addition to mill. It is proposed to begin work in the spring.

Solbro Batting Co., Inc., Worcester, Mass., has been chartered to operate a local mill for production of cotton batting and allied products. Max Solod is president; Samuel Solod, 134 Gold St., Worcester, is treasurer and representative.

National Automotive Fibres, Inc., Detroit, Mich., and Oakland, Calif., has awarded general contract to William P. Neil Co., 4814 Loma Vista Ave., Los Angeles, Calif., for new one-story plant at 5000 Randolph St., Los Angeles, totaling 75,000 sq. ft. floor space, to cost about $250,000, with equipment. Harry T. Miller, 4814 Loma Vista Ave., Los Angeles, is architect.

Johns-Manville Corp., New York, N. Y., has approved plans for three new additions to mill at Manville, N. J., each one-story, about 150x200 ft., including new power house. Equipment will be installed for large increase in present capacity. Entire project will cost close to $1,300,000. Appropriation of about $1,000,000 also made for expansion and improvements in branch mill at Asbestos, Que.

Victory Mills, (N. Y.), branch of the **American Mfg. Co.,** has been sold to the Victory Mills Mfg. Co., of New York City.

Doon Twines, Ltd., Kitchener, Ont., have installed much new machinery and electrical equipment to increase production.